

SLEEP IN THE ELDERLY:
EXPERIENCES, EXPECTATIONS, AND ADAPTATIONS

by

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The purpose of this research is to determine the relationship between self-report of sleep behavior among non-institutionalized elderly and their expectations regarding sleep. Sleep facilitators utilized to manage sleep disturbances and affective responses to sleep behavior changes are also explored. It is important that nurses understand sleep behavior changes experienced by non-institutionalized elderly so that effective nursing care can be planned and implemented for clients in the community, hospitals, and institutions. Findings from this research help to validate the objective behavioral theory of sleep proposed by Webb.

The sample consisted of 282 subjects over the age of 65 who reported to the Dunedin Program clinic from

September 28, 1987, to November 25, 1987. Subjects took the Sleep Questionnaires home to complete after consenting to participate.

Subjects consistently rated their sleep as having been better when they were younger. Subjects reported having slept better, gotten enough sleep, felt more rested upon awakening, enjoyed sleep more, and experienced deeper sleep when they were younger.

Emotional stress was the most frequently selected behavioral inhibitor of sleep. A disproportion was found between the number of subjects who identified emotional stress as a factor in sleep disturbance (n=67) and the number of subjects who found relieving emotional stress to be an effective sleep facilitator (n=24).

Behavioral facilitators employed when sleep disturbances occurred included relaxing, reading, and praying. Few subjects (6%) sought help from health care professionals or family and friends for sleep disturbances. When asked how they feel when they experience sleep disturbances, the most frequent response indicated they accept the disturbance.

Implications for nursing include utilizing this information to assess sleep patterns of the elderly, to plan and implement nursing care, and to educate clients experiencing sleep disturbances. Gerontological nurses, as experts on normal age related changes, educate

other health care providers regarding age related changes in sleep patterns and sleep facilitators the elderly find useful in dealing with sleep disturbances.

Longitudinal research is needed to substantiate age related sleep behavior changes. Further research is also needed to determine the generalizability of sleep facilitators to larger numbers of the elderly.

CHAPTER I INTRODUCTION

Problem Statement

In 1980 25.5 million (11.7%) Americans were over the age of 65 (Atchley, 1985), compared to approximately 50,000, or 2.5% of the population, in 1790. It has been projected that, based on low birth rates and stable death rates, in the year 2030, 51.6 million Americans (20.9% of the population) will be over age 65.

The over-65 population is itself growing older. In 1960 almost 66% of the over 65 population was under 75 years old. Six percent of the over 65 year age group was over 85 in 1960. By the year 2000, the young-old (65 to 74 years) will represent 55.7% of the over 65 population, while the proportion of the over 85 year age group will have risen to 10.4% of the over 65 population. Because of the differences in mortality rates between males and females, this growing elderly population will be predominantly female.

An increase in sleep disturbances has been found in elderly subjects over that reported in other age groups (McGhie & Russell, 1962). The elderly experience more difficulty getting to sleep, a decreased ability to sustain sleep and more early morning wakening than younger persons (Webb, 1983). Women report sleep

difficulties more frequently and report more frequent use of sleeping medications than men. Of those elderly individuals habitually taking sedatives, a large proportion started taking sedatives while hospitalized (Lamberg, 1984). Since these medications are usually ordered as needed, the nurse has a very important role in assisting elderly clients in decision making regarding the management of sleep behavior patterns. Nationally, the elderly comprise 12% of the population yet account for 31.2% of the total health care expenditure. (Wolinsky, Mosely, and Coe, 1986). The cost of care for persons with sleep disturbances contributes to health care expenditure both directly and indirectly. Direct costs are incurred for sedatives. Indirect costs result from the side effects of sedatives. Side effects of sedatives, including confusion and incontinence, leading factors in nursing home admission, are more prevalent and more serious in the elderly than in younger persons. Decreasing the use of sedatives in the elderly could substantially decrease health care expenditures by decreasing the direct and indirect costs related to the treatment of sleep disturbances.

Little is known about what the elderly expect of sleep patterns as they age. Sleep facilitators utilized

by the elderly when they experience sleep disturbances and the attitudes of elderly subjects to sleep pattern changes they experience have not been explored. It is important to discover the normal sleep patterns of the elderly who reside in the community so that the nurse will understand when deviations from normal occur in clients she or he is caring for. Nurses are responsible for individualizing care for elderly when they are hospitalized or institutionalized. It is important to base that plan of care on a sound scientific base. This includes knowledge of normal age related changes as well as responses of the elderly to changes they experience. Nurses play a very active role in educating elderly and often instruct clients regarding normal age related changes. In the area of sleep disturbances the nurse is in a key role to acquaint elderly clients with normal age related changes and strategies employed and found effective by other elderly persons. Nurses employed in the expanded role of nurse practitioner are able to prescribe medications for the elderly. It is important to understand sleep related sleep behavior changes in order to develop protocols that are effective in helping elderly clients deal with sleep disturbances.

Gerontological nursing is a new specialty area, and the gerontological clinical specialist often assumes the

function of educating other members of the health care team regarding normal age related changes and strategies for dealing with these changes. It is important, therefore, to determine what these changes are, their prevalence, and effective strategies being utilized by elderly living in the community.

This research is undertaken to determine the relationship between self-report of sleep behavior among well elderly living in the community as it may be affected by expectations regarding sleep, sleep facilitators utilized by elderly who experience sleep disturbances, and sleep inhibitors common to the elderly. These data are vital for nurses to develop nursing interventions to assist the elderly in managing sleep pattern changes. Physicians who are responsible for a medical plan of care that includes large numbers of sleeping medications for elderly clients can also use these data. Elderly also need to have this information for better management of sleep pattern changes they experience.

Research to date has focused on sleep behavior patterns experienced by the elderly. Several surveys have been conducted (Domino, Blair, & Bridges, 1984; Hayter, 1983; McGhie, & Russell, 1962; and Tune, 1969). Electroencephalogram sleep recordings have also been

utilized in the study of sleep of the elderly (Agnew, & Webb, 1971; Bixler, Kales, Jacoby, Soldatas, & Vela-Bueno, 1984; Blois, Feinberg, Gaillard, Kupfer, & Webb, 1983; Carskadon, Brown, & Dement, 1982; Karacan, Thornby, Anch, Holzer, Warheit, Schwab, & Williams, 1979; Roehrs, Zorick, Sicklesteel, Wittig, & Roth, (1983); Reynolds, Coble, Black, Holzer, Carroll, & Kupfer, 1980; Webb, & Schneider-Helmert, 1984; Webb, 1982). Webb (1983) conducted a study of sleep patterns of elderly subjects which included sleep diaries, post-sleep inventories, EEG recordings, and sleep questionnaires. Observational studies of sleep in the elderly have also been conducted (Webb & Swineburne, 1971; and Gress, Bahr, & Hassanein, 1981).

Expectations have been shown to be a factor in defining a condition as a problem. Further, expectations are developed based on previous personal experience and in comparison with what others are experiencing (Blau, 1964). Although elderly subjects have been found to experience sleep disturbances, they often do not report sleep complaints. It has been suggested (Carskadon, VanDenHoed, & Dement, 1980) that the elderly may accept the stereotyped view of sleep in the elderly and believe that their disturbed sleep is normal for people their age.

Sleep facilitators and inhibitors common to the elderly, with the exception of sedative use, have not been explored. Decreasing the amount of time spent in bed at night to consolidate sleep for individuals who perceive their sleep as disturbed and taking a nap during the day if day tiredness is a problem have been suggested (Carskadon, Brown, & Dement, 1982). The relationship between expectations about sleep, and the facilitators and inhibitors the elderly employ in dealing with sleep pattern disturbances has also not been explored.

Several study questions were posed. What is the sleep behavior reported by persons 65 and older residing in the community? How do the elderly perceive their sleep to have changed? What is the relationship between sleep behaviors reported by the elderly and their views of sleep in others their age? What is the relationship between current sleep behavior reported by the elderly and self-report of their previous sleep behavior? What types of sleep facilitators do the elderly use to deal with sleep pattern disturbances they experience? What types of sleep inhibitors do the elderly exhibit? How effective are sleep facilitators employed by the elderly in dealing with sleep pattern disturbances? What are the subjective reactions of the elderly to sleep pattern

disturbances? What is the affective response reported by the elderly to sleep disturbances they experience?

Objective Behavioral Theory of Sleep

The objective behavioral theory of sleep developed by Webb (in press) includes behavioral, adaptive, and restorative components. Two theories of sleep, the restorative theory and the adaptive theory, were in existence prior to the development of the objective behavioral theory of sleep. The objective behavioral model of sleep is an attempt to reconcile the differences between the two preexisting theories.

The behavioral component of the objective behavioral theory of sleep (Webb, in press) consists of modulating, intervening, and dependent variables. Sleep behavior is the dependent variable and consists of the presence or absence of sleep (sleep latency and sleep length), sleep structure (sleep stages and continuity of sleep), and subjective responses to sleep (sleep evaluations and thresholds and dreams) (see Figure 1-1).

Adaptive Theory of Sleep

The adaptive theory of sleep proposed by Webb (1974) is a precursor to the objective behavioral theory of sleep. In the adaptive theory of sleep (Webb, 1974, p. 1023) sleep is considered to be an adaptive

MODULATING VARIABLES

Species Differences

Developmental Stages

Organismic States

Individual Differences

INTERVENING VARIABLES

DEPENDENT VARIABLE

Sleep Demand

Sleep Behavior

Behavioral Facilitators
or InhibitorsPresence or Absence of
Sleep (Sleep Patterns)

Circadian Tendencies

Sleep latency

Sleep length

Sleep Structure

Sleep stages

Continuity

Subjective Responses to
Sleep

Sleep evaluation

Thresholds and Dreams

Adapted from Webb (in press)

Figure 1-1. Diagram of the Behavioral Component Within
the Objective Behavioral Theory of Sleep

non-responding and the particular characteristics of the sleep of each species evolved from the adaptive role of this process in the ecological niche of each species.

Webb addresses the semantic problem related to describing sleep. Webb asks, "Is sleep behaving or not behaving? If an animal is required to avoid continuing a behavior, is this avoidance behavior or non-behavior?" Webb resolves this issue by using the term non-responding defined as "qualitatively minimal behavioral engagement with the surround" (Webb, 1974, p. 1023) in describing sleep behavior.

The primary postulate of the adaptive theory of sleep is that survival requires periods of non-responding. Secondly, sleep is an active process controlling the behavior of the animal, resulting in nonresponding. According to the adaptive theory of sleep (Webb, 1974), three critical variables associated with sleep of all species within each twenty-four hour period are diurnal placement, intermittency, and total amount. Diurnal placement refers to the time of day sleep usually takes place. Some animals are nocturnal, sleeping during the day and searching for food at night while others sleep during the night and are awake during daylight hours. Intermittency refers to the continuity of sleep. Some species, for example cats,

sleep for short intervals several times during the 24 hour cycle. Total amount of sleep is the total number of hours the animal sleeps. The primary correlates of these variables are the search for food, and the position on the predatory hierarchy of the particular species.

Species differences are further addressed in the adaptive theory of sleep in that precocial animals, those animals that are highly independent at birth, vary little in the total amount of sleep time from birth to adulthood. Altricial animals, those animals that are highly dependent at birth and for a long time afterward, including humans, vary greatly developmentally, with infants sleeping much longer than adults.

Restorative Theory of Sleep

The restorative theory of sleep holds that wakefulness causes a depletion or build up of some substance that causes sleep to occur (Dann, Beersma, & Borbely, 1984). Sleep serves to dissipate or buildup whatever it is that either becomes depleted or increases to an excess. The theory developed by Dann, et al. (1984) is based on the presence of a sleep-regulating variable (S) which increases during wakefulness and decreases during sleep. Sleep onset is initiated when S reaches an upper threshold (H) and awakening occurs when

the lower threshold is reached (L). The restorative theory of sleep further holds that the thresholds display a circadian rhythm that is controlled by a single circadian pacemaker. The major shortcoming of this theory is that S has not been found and cannot be measured (Webb, in press).

The common elements of adaptive models of sleep and restorative models of sleep are an interaction of sleep demand and circadian tendencies and facilitators and inhibitors of sleep (Webb, in press). Sleep demand (Webb, in press) is the amount of time the individual is awake preceding sleep. Prior wakefulness represents sleep demand in the restorative theory of sleep (Dann et al., 1984). Sleep demand is solely a time variable and does not include activity or behavior within that time. Time asleep decreases sleep demand (Dann, et al., 1984; Webb, in press). Sleep latency, the time it takes to get to sleep, has been found to be affected by prior wakefulness (Webb & Agnew, 1971). The circadian tendency of sleep behavior is the time of occurrence of sleep within a twenty-four cycle. Circadian tendencies have been described in both the adaptive theory of sleep (Webb, in press), and in the restorative theory of sleep (Dann et al., 1984).

External stimuli enhance or interfere with the circadian tendency of the sleep-wake cycle (Webb, 1982). Behavioral facilitators and inhibitors are behaviors of the individual which make sleep more or less likely to occur (Webb, in press). Anything that makes sleep more likely to occur such as lying down is a sleep facilitator. A sleep inhibitor is anything that keeps the individual from falling asleep, for example, standing upright. Behavioral facilitators and inhibitors may be voluntary or involuntary. Behavioral facilitators and inhibitors are complex and multiple and include such things as body temperature, light, noise, and stress level. External conditions described by Dann, et al., 1984, are analogous to behavioral inhibitors and facilitators (Webb, in press) and can affect the threshold of S. The upper threshold has been demonstrated to be altered in sleep deprivation studies. Such environmental factors as darkness, warmth, and lack of social stimulation can lower the threshold so that sleep onset occurs. Naps can cause a depression of the upper threshold. The ringing of an alarm clock may precipitate a sudden rise in the lower threshold, causing awakening (Dann et al., 1984).

The three intervening variables (Webb, in press), sleep demand, circadian tendencies, and behavioral

facilitators and inhibitors, are modulated by four additional variables (Webb, in press). These four modulating variables are species differences, developmental stages, organismic states, and individual differences. These modulating variables affect the intervening and dependent variables. Species differences have been discussed under the adaptive theory of sleep. Sleep behavior changes with developmental stages in humans. Infants sleep a greater proportion of the 24 hour cycle than adults. Naps are a part of the infant's sleep cycle and are not a part of the adult sleep cycle. Nap patterns seem to emerge again in the elderly. Sleep demand, circadian tendencies, and behavioral facilitators and inhibitors change from infancy to old age (Webb, in press). Organismic states are physiological characteristics including such things as pain, medications, sedation, stimulants, sleep apnea, and nocturnal myoclonus (Webb, in press). Painful conditions such as arthritis are more prevalent in the elderly than in younger adults. The use of sedatives is higher in the elderly. Sleep apneas and nocturnal myoclonus increase in incidence with age. Individual differences occur within any species, developmental stage or organismic state (Webb in press). Some individuals require as little as 4

hours of sleep to function well, while others require more than the average 8 hours to function well.

The behavioral component of the objective behavioral theory of sleep (Webb, in press) is selected for further study in the current project (see Figure 1-2). The intervening variables described in the objective behavioral theory of sleep addressed in this study are sleep facilitators and inhibitors and circadian tendencies. Dependent variables described in the objective behavioral theory of sleep addressed in this study include (1) the presence or absence of sleep as measured by sleep latency and length of sleep episodes; (2) subjective responses to sleep consisting of sleep evaluations; and (3) sleep structure limited to continuity of sleep. Sleep stages, generally measured using EEG, are not measured in this study. Sleep thresholds and dreams are not addressed in this study.

The modulating variable species differences is not dealt with in this research. Only humans are studied. Individual differences are not dealt with in this study. The design used provides some information regarding developmental stages, and organismic states, the two remaining modulating variables described by Webb (in press). If sleep behavior changes are developmental, one would expect to detect changes in all subjects with

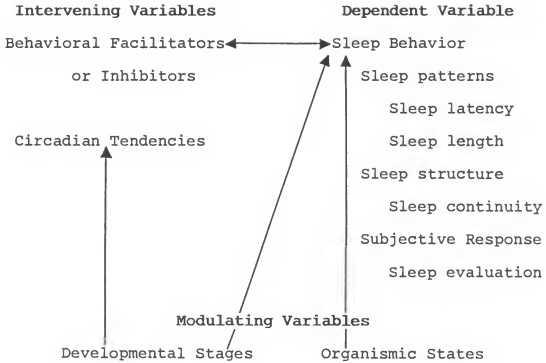


Figure 1-2. Objective Behavioral Theory of Sleep:
Schema of Selected Components

aging. Asking subjects questions about their sleep when they were younger should shed some light on the developmental nature of sleep patterns. Data obtained from the retrospective portion of the questionnaire must be interpreted with caution. Individuals are being asked to recall sleep patterns experienced when they were younger and their responses may be influenced by memory as well as events that have occurred in the time interval between then and now.

Organismic states are addressed by reviewing data from elderly individuals living in a community to determine the relationship between recent major illness and sleep behavior. Self-ratings of health are available for a segment of the population and these will be utilized in relating organismic differences to sleep patterns.

The Sick Role

Although sleep disturbances are not illnesses, elderly individuals often think of them as illness, and seek help in the same manner individuals experiencing other illnesses seek help. The sick role as described by Parsons (1951) allows a framework for explaining this perspective. Parsons defines illness as:

a state of disturbance in the "normal" functioning of the total human individual, including both the state of the organism as a biological system and of

his personal and social adjustments. It is partly biologically and partly socially defined. (p. 431).

Parsons describes four aspects of the institutionalized expectation system related to the sick role. The first aspect is that the sick individual is excused from normal social role responsibilities. The excuse is related to the nature and severity of the illness. Second, the individual is helpless to "will" himself well. Third, the individual has an obligation to get well. Fourth, the individual is expected to seek competent help and to cooperate in trying to get well. The urgency of the need for help varies with the severity of the disability, suffering, and risk of death or serious, lengthy, or permanent disability. The situation of illness places the patient and those close to the patient in a situation of strain.

Sleep disturbances can be discussed within the framework of Parson's sick role. The person experiencing sleep disturbances may be excused from social roles because of being perceived as too tired to perform these roles adequately. This judgement is directly related to the severity and length of the sleep disturbance. Granting of sick role status is related to the degree of responsibility for the sleep disturbance assessed to the individual. If the individual does such things as consume caffeinated drinks immediately prior

to retiring, that individual will less likely be granted the privileges of the sick role. The individual is expected to try to help him/herself by reducing caffeine intake, decreasing stress, and using remedies such as drinking milk before retiring. If the sleep disturbance persists the individual is expected to seek competent help, usually from a physician. The individual is then expected to cooperate with the physician and carry out the prescribed therapy. Death or permanent disability are not expected to be caused by sleep disturbances. However, individual suffering from severe and prolonged sleep disturbances may fear that their mental health will be affected. Side effects of medications used to treat sleep disturbances may be severe.

Sleep disturbances experienced by one member of the family may place other members of the family under a strain. Family members may be asked to alter their routines to accommodate the sleep disturbed individual. The sleep disturbed individual may be excused from family roles which need to be adopted by other family members. It seems relevant to address help-seeking behavior of the elderly with regard to sleep disturbances from the perspective of Parson's sick role.

Operational Definitions

Several operational definitions are utilized in this research. They are as follows:

Sleep behavior. Sleep behavior is comprised of sleep patterns, sleep structures, and subjective responses to sleep.

Sleep Pattern. Sleep pattern is the presence or absence of sleep as identified by sleep latency and length of sleep episode.

Sleep latency. Sleep latency is the length of time subjects report it takes them to get to sleep.

Length of sleep episode. The length of the sleep episode is the duration of sleep as measured by the average number of hours subjects report sleeping at night.

Sleep structure. Sleep structure is limited to continuity of sleep and omits sleep stages in this study.

Continuity of sleep. Continuity of sleep consists of the number of awakenings, the length of time awake after falling asleep, and the frequency and length of naps.

Subjective response to sleep. Subjective response to sleep is limited to sleep evaluations and eliminates thresholds and dreams in this study.

Sleep evaluations. Sleep evaluations include the subject's estimate of how well they sleep; self-rating of the amount of sleep they get; how rested they feel when they wake up; how much they enjoy sleep; and how light or deep they report their sleep.

Circadian tendency. Circadian tendency is the placement of sleep within a 24 hour cycle as measured by the time subjects report as their bedtime and time of getting out of bed on weekdays and on weekends. Circadian tendency also includes the reported weekday bedtime of subjects compared to their average weekend bedtime; the average weekday time of awakening compared to their average weekend time of awakening; the use of an alarm clock; the number of days per week subjects report going to bed more than one hour earlier or later than their average bedtime.

Sleep disturbance. Sleep disturbances include the reported frequency of; (1) difficulty getting to sleep; (2) awakening during the night without being able to return to sleep; and (3) awakening earlier than expected without being able to return to sleep.

Behavioral facilitators. Behavioral facilitators are strategies elderly subjects identify as those they use to help them when they experience sleep disturbances

and which are considered effective in dealing with sleep disturbances.

Behavioral inhibitors. Behavioral inhibitors are those variables identified by subjects as possible causes of overall sleep problems; and strategies elderly subjects employ which have been shown to have a detrimental effect on sleep (i.e. alcohol or sedatives).

Affective responses to sleep disturbances.
Affective responses to sleep disturbances are the reported reactions to sleep pattern disturbances.

Elderly. Elderly are individuals age 65 or older.

Summary

The objective behavioral theory of sleep as described by Webb (in press) is used as the foundation for this research with the focus on exploring the behavioral components of the theory. This research is undertaken to determine the relationship between sleep behavior of the elderly and expectations regarding sleep. Sleep facilitators employed by the elderly as they encounter sleep disturbances are also investigated. Affective reactions to sleep disturbances experienced by elderly subjects are also explored. Help-seeking behavior for sleep disturbances will be examined within the framework of Parson's sick role.

CHAPTER II REVIEW OF LITERATURE

Sleep Behavior Changes With Age

Research findings related to sleep pattern changes in the elderly suggest that there is a great variability in sleep behavior in elderly subjects (Hayter, 1983). As clients age, changes in sleep behavior are reported in subjects over age 75 with still greater changes seen in subjects over 85 year of age (Hayter, 1983; McGhie & Russell, 1962). The primary sleep related changes that occur with aging are difficulty getting to sleep, awakening within sleep, sleep stage lability, longer time to return to sleep following arousal and early awakenings. (Webb, 1983).

Sleep Patterns

Sleep latency, the time it takes to fall asleep, is longer in older subjects (Agnew and Webb, 1971; Hayter, 1983; and Webb and Schneider-Helmert, 1984). Agnew and Webb (1971) compared the sleep latencies of seven age groups and found that subjects aged 16 to 69 had sleep latencies of one to five minutes. The oldest age group, 60 to 69 years, exhibited the longest sleep latencies with a mean of 15 minutes to fall asleep. More frequent night awakenings occur in those over 85 (Hayter, 1983; Tune, 1969; Webb, 1982a). Sleep patterns were evaluated

in the laboratory and total wake time was found to be correlated positively with age (Bixler, et al., 1984). This difference was due primarily to an increase in the number and duration of night awakenings in subjects in the 50 to 80 year group. Webb and Swineburne (1971) observed night awakenings in subjects ranging from two to five per night. Awakening during the night increased with age (Tune, 1969) with subjects over 50 having the most disturbed sleep.

Differences in sleep behavior changes between men and women have not been found to be significant (Carskadon, et al., 1982; Webb & Schneider-Helmert, 1984; Webb, 1982c). Women report more pre-sleep difficulties (McGhie & Russell, 1962) including longer sleep latency (Hayter, 1983; Webb & Schneider-Helmert, 1984). A greater number of awakenings for men has been reported (Bixler, et al., 1984; Reynolds, Kupfer, Taska, Hoch, Sewitch, & Spiker, 1985; and Webb, & Schneider-Helmert, 1984).

An increase in the number of naps has been found in those over 75 years of age (Hayter, 1983). In subjects over 85, the total amount of nap time increases with no increase in the number of naps (Hayter, 1983). Tune (1969) reported an increase in the number and duration of naps in older subjects. Webb and Swineburne (1971)

observed the sleep of 19 elderly subjects for two 36 hour periods and found that almost all of the subjects took one or more naps. Great variability was found with one subject not taking any naps while four subjects took three naps a day. The length of naps was not related to night sleep and was judged to be neither compensatory nor limiting relative to night sleep.

Webb and Agnew (1974) studied 14 subjects for 14 days in a time-free environment to determine if sleep patterns were dependent on exogenous or endogenous factors. All subjects displayed a rhythm greater than 24 hours. Large individual difference in the amount of variance from 24 hours were seen. The overall distribution of sleep stages did not differ from baseline recordings. Webb and Agnew (1974) concluded that overall sleep patterns remain stable in a time-free environment. Prior wakefulness, length of sleep, and sleep onset time continue to affect sleep. This is taken as evidence for the stability of the structure of the sleep process.

Subjective Response to Sleep

Karakan, et al., (1979) studied 1645 subjects ranging in age from 18 to over 70. A steady increase in the percentage of subjects reporting trouble sleeping occurred with age. Seventy-five percent of the 18-19

year age group reported never or seldom having trouble sleeping while 50% of those over 70 reported never or seldom having trouble sleeping. Twenty-five percent of subjects over 70 reported having trouble sleeping often or all the time. In the 18-19 year age group, 6% of the subjects reported trouble sleeping often or all of the time. Females in the older age ranges reported more difficulty sleeping than males. When asked what kind of sleep problems they experienced, a higher percentage of respondents over age 40 indicated trouble staying asleep or waking too early.

McGhie and Russell (1962) found that despite sleep changes, the aged tended to complain less of morning tiredness until age 75 when there was a significant increase in the incidence of reports of day tiredness. Carskadon, et al., (1982) reported that only transient arousal and respiratory events had a statistically significant relationship to daytime sleep tendency. Continuity of sleep was of greater significance to daytime well-being than total sleep time.

Webb and Levy (1982) found that older subjects were affected more by acute sleep deprivation than younger subjects. Although many sleep pattern changes occur with aging, few are related to daytime tiredness (McGhie & Russell, 1962). Day tiredness does not significantly

increase until age 75. Women and those over 75 are more likely to take sedatives. This is of great importance because the over 75 age group is the most rapidly growing cohort, and women constitute a high percentage of that cohort.

Webb and Schneider-Helmert (1984) use the terms "disturbance" rather than disease and "category" rather than symptom when describing sleep changes. This reflects their belief that sleep changes are associated with the aging process.

Developmental Changes in Sleep Patterns

Webb (1982b) was able to study a second time the sleep of five subjects who had undergone sleep recordings of four nights 15 years earlier. The recordings at an older age showed a sharp increase in awakenings. Rank order correlations for time one and time two resulted in .55 correlation on number of awakenings.

Organic States That Affect Sleep

Organic states that affect the sleep of the elderly include sleep apnea, nocturnal myoclonus, arthritis, heart disease, respiratory disease, Alzheimer's disease, blindness, and nocturia. (Milne, 1982; Quan, et al., 1984; and Schirmer, 1983). Roehrs, Zorick, Sicklesteel, Wittig, and Roth (1983) conducted a study of 562

patients referred to a sleep disorder clinic because of sleep disorders. Of those patients seen, 97 were in the 61 to 81 year age group, 264 were in the 41 to 60 year age group and 202 were in the 20 to 40 year age group. Nocturnal myoclonus was the most frequent problem of the elderly. Sleep disturbances related to drug and alcohol use were higher in the oldest age group than in the other two groups. Other disorders that contributed to sleep disorders included sleep apnea, psychophysiologic and psychiatric disorders, medical disorders and circadian rhythm disturbance.

Sleep apnea is a condition in which the individual experiences episodes of apnea throughout the night (Quan, et al., 1984). Sleep is interrupted by apneic episodes that are often followed by loud snoring. Sleep apnea is often most apparent to the bed partner, and may go unrecognized by the individual experiencing sleep apnea. Because of the sleep fragmentation, the individual often experiences daytime hypersomnolence.

Nocturnal myoclonus is a condition in which the individual experiences periodic leg movements throughout the night that result in sleep fragmentation (Quan, et al., 1984). Excessive daytime hypersomnia may result.

Arthritis and other painful conditions may prevent the elderly individual from getting to sleep easily or

awaken the individual during the night. (Quan, et al, 1984). Arthritis is more frequent in the elderly than in younger age groups. Elderly individuals with heart disease may be awakened from sleep because of pain or because of difficulty breathing (Quan, et al., 1984). Respiratory disorders, Alzheimer's disease, and blindness may also lead to sleep fragmentation and increased daytime somnolence (Quan, et al., 1984).

Nocturia, getting out of bed at night to void, is more common in the elderly than in younger individuals (Schirmer, 1983). This may be due to prostatism in males or to an increased use of diuretics in either males or females.

Individual Differences

Great variations in sleep behaviors are seen between individuals. The average number of hours adults sleep is 7.5 with a standard deviation of one hour (Webb, 1983). This means that an individual may sleep 6.5 to 8.5 hours and be within one standard deviation of the norm for sleep. Ninety-nine percent of individuals will sleep between 5.5 and 9.5 hours. Webb and Swineburne (1971) observed the sleep of nine men and 10 women. They found great variability between subjects. Hayter (1983) studied sleep of 212 noninstitutionalized subjects aged 65 to 93 and found great variability even

among subjects in the same age group. Hayter found variability in time spent in bed, sleep latency, number and amount of time awake after sleep onset, number and length of daytime naps, time going to bed, and time getting up.

Behavioral Facilitators and Inhibitors of Sleep

Organic disease such as arthritis, sleep apnea, nocturnal myoclonus, cardiac disease, respiratory conditions have been indicated in sleep disturbances. Treating the underlying cause of the sleep disturbance may be all that is necessary to restore adequate sleep (Quan, et al., 1984). Exercise programs and relaxation training have also been suggested (Milne, 1982; Quan, et al., 1984, Schirmer, 1983). Praying may be a soothing activity for some individuals (Schirmer, 1983). Education regarding normal sleep pattern changes that occur with age has also been recommended (Milne, 1982; Quan et al., 1984, Schirmer, 1983). Eating a light snack or drinking a glass of milk before retiring have been suggested (Milne, 1982; Schirmer, 1983). Drinks which contain caffeine should not be ingested within two hours of bedtime (Milne, 1982). A regular sleep schedule to regulate the biological clock has been recommended (Schirmer, 1983). For difficulty getting to

sleep, getting out of bed and listening to music or reading may be helpful (Schirmer, 1983).

Older subjects were more likely to report sedative use than younger subjects (McGhie & Russell, 1962; Hayter, 1983; Karacan, et al., 1979). In 1981, twenty-one million prescriptions were written for sleeping pills (Lamberg, 1984). An increase in the use of sedatives has been found in the 85-year-old age group (Hayter, 1983). Many people who report habitually taking sleeping pills state that they began taking sleeping pills while they were in the hospital (Lamberg, 1984). Sedatives are usually ordered as needed, therefore the nurse has great latitude in administering these medications. Sedative use can result in side effects such as ataxia, paradoxical excitement, confusion, incontinence, and even death in individuals with sleep apnea (Quan, Bamford, & Beutler, 1984). Confusion and incontinence are leading factors in nursing home admissions of the elderly. Nurses play a pivotal role in sedative use among the elderly.

Lamberg (1984, p.139) advises against the use of sleeping pills if one is "middle-aged" or older because of the increased incidence of ataxia, the decreased ability of the liver to detoxify the drug and the incidence of interaction with other drugs. Other

conditions frequent to the elderly in which the authors warn the use of sleeping pills include the presence of respiratory disease, liver or kidney disorders, alcohol consumption, and a history of having taken sleeping pills before without improvement in sleep.

Problems associated with sedative use include confusion, paradoxical excitement, morning "hangover" perhaps accompanied by ataxia, interactions with other drugs, dangers in specific illness such as sleep apnea, and distortion of natural sleep patterns (Hartman, 1980). Because of decreased ability to adapt, and increased incidence of chronic illness, the elderly are more likely to experience adverse effects from sedatives (Quan, et al., 1984).

Most sleep inducing agents lose their effectiveness within a week or two and influence sleep stage pattern during their administration (Borkovec and Fowles, 1973). Many cases of insomnia do not involve physiological causes such as pain but are caused by psychological or environmental factors. (Borkovec and Fowles, 1973). Psychological factors include such things as stress, anxiety, and fear, while environmental factors include such things as noise, light, and temperature. The most important biological cause of insomnia has been identified as drugs (Borkovec et al., 1973). Sedatives

are of questionable value in the elderly and may contribute to a reduced quality of sleep rather than improved sleep (Colling, 1983). In 1974, one-third of all prescriptions for secobarbital and diazepam were for patients over 60 years of age (Quan, et al., 1984).

Excessive use of alcohol is associated with the same kind of sleep problems associated with sedatives (Milne, 1982; Quan, et al., 1984). Individuals may fall asleep more readily after consuming alcohol, but are likely to awaken and be unable to return to sleep (Quan et al., 1984).

In this research, sleep facilitators employed by the elderly when they experience disruptions of sleep patterns are explored. Sleep inhibitors exhibited by the elderly are also explored.

Self-Rating of Health

An older person with a given set of health status characteristics is more likely than a younger person with similar characteristics to rate his/her health better than that of peers the same age (Stoller, 1984). Older persons are more likely to rate their health positively than younger persons (Cockerham, Sharp, & Wilcox, 1983). The old-old, those over age 75, assess their health at a higher level than do the young-old

exhibiting similar health characteristics (Linn, & Linn, 1980).

Symptoms themselves do not define a person as sick, but rather serve as "triggers that raise questions for further exploration" (Zola, 1966). Self-assessments of health among older people seem to be influenced by comparisons with their peers (Cockerham, et al., 1983).

In a study conducted by Stoller (1984) most older respondents rated their health on the upper (positive) rungs of the Cantril ladder (Cantril, 1965). In this study subjects were presented with a picture of a ladder with the rungs numbered from zero on the bottom rung to nine on the top rung. Subjects were asked where they would place themselves, where they would place others their age, and where they thought they would be in five years. The majority (63.8%) of the elderly subjects in this study (Stoller, 1984) rated their own health better than they rated the health of other people their own age. Stoller concludes that self-assessments of health by the elderly as better than others of the same age may reflect misconceptions about health by the elderly. The elderly may believe that a marked decrease in level of health and functional decline are inevitable with aging. Because of these misconceptions, when the elderly do not experience the declines they expect with aging, they

consider themselves the exception and rate their health better than they rate the health of their peers.

It can be concluded, therefore, that expectations of health influence the way the elderly describe their health. In this research, it is anticipated that expectations regarding sleep disturbances in aging will correlate with self-rating of sleep by the elderly. It is anticipated that elderly individuals experiencing sleep disturbances will rate their sleep more poorly than they rate the sleep of others their age.

Some elderly persons may accept sleep pattern changes as part of aging and not define sleep changes they are experiencing as problems (Quan, et al., 1984). Other elderly individuals interpret sleep pattern changes as being abnormal and define changes as problems (Quan, et al., 1984). Lack of knowledge on the part of the elderly concerning age related sleep changes (Hayter, 1983; and Quan, et al., 1984) and the great variability of sleep patterns exhibited by the elderly (Hayter, 1983) contribute to the confusion. This research is undertaken to further elucidate the behavioral aspects of Webb's Objective behavioral Theory of Sleep (in press) by describing sleep behaviors experienced by the elderly, their expectations regarding sleep behavior, help-seeking for sleep disturbances,

sleep facilitators and inhibitors common to the elderly and affective responses to sleep behavior changes.

CHAPTER III MATERIALS AND METHODS

Methodology

Subjects

Using a survey design, 336 subjects from the Dunedin Clinic, Dunedin, Florida were given questionnaires to complete. All eligible clients of the Dunedin Clinic who had their annual health assessment during the period from September 28, 1987 to November 25, 1987 were invited to participate in the main study. Subjects ranged in age from 65 to 94 with a mean age of 78.3. A total of 282 subjects returned the sleep questionnaire in a useable form. One hundred sixty-five (57.9%) respondents were female and 87 (35.4%) were male. Demographic data was not available for 33 subjects. All subjects were living in the community.

Setting

The Dunedin Program is a longitudinal study of 4200 elderly residents of Dunedin, Florida, funded in part by the James Hilton and Emma Austin Manning Foundation since 1975. The Dunedin Program is conducted at the Dunedin Clinic. The sole function of the Dunedin Clinic is to conduct the Dunedin Program. The purpose of the Dunedin Program is to study healthy elderly individuals living in the community for unidentified health

disorders. The study is also conducted to generate information about the prevalence of disease, signs and symptoms, and to determine biochemical norms for this age group. (Hale, Marks, & Stewart, 1980).

Each year subjects complete a detailed questionnaire about their health including a detailed medication assessment. Subjects then report to the Dunedin Clinic where an electrocardiogram is performed, and biochemical analysis of a blood sample is conducted. Each subject's blood pressure is assessed. Subjects are referred to their private physician for treatment if health problems are discovered.

The Dunedin Clinic provides access to a readily available subject pool from which subjects can be drawn. All subjects are over the age of 65, and are living independently in the community. Longitudinal data are available on subjects and it may be possible to continue to study subjects in this project in the future.

Dunedin, Florida is located on the western coast of Florida. Dunedin is located in Pinellas county, the most densely populated county in Florida with 4.4 persons per acre. The economy of Dunedin is dependent on tourism and retirement living. According to the Chamber of Commerce (1986) the permanent population estimate of Dunedin is 35,292. Approximately 43 percent

of Dunedin's population is sixty years of age or older with females making up approximately 54.7% of the total population and 58.1% of the over sixty population.

White persons constitute 98.7% of the population.

Educational information indicates that 72.4 percent of the Dunedin residents 25 years of age and older are high school graduates. Eighteen percent have had some college and 16 percent have had at least 4 years of college.

Instruments

The Sleep Questionnaire developed by White (1975) (See Appendix A) was utilized to assess subjects' current sleep patterns, their previous sleep patterns, and their thoughts about the sleep patterns of others their age. Items were added to the Sleep Questionnaire to determine mechanisms employed by the elderly when they encounter sleep disturbances of sleep onset latency, awakening during the night, and early morning awakening. The frequency of the use of these mechanisms, and the subjects' perception of the effectiveness of these mechanisms were assessed. Subjects' affective responses to sleep disturbances were also assessed. The final questionnaire consisted of 94 items. Webb and Stone (1963) administered a questionnaire related to sleep to 104 undergraduate

students over a two year period. Test-retest reliability was .82 for the first class and .83 for the second class for length of sleep. Sample two was asked a question regarding length of time to function at full capacity upon awakening. Test-retest reliability was .63.

Reliability of the Sleep Questionnaire used in this study has been established in an investigation which compared the measurement of sleep behavior using this questionnaire versus using a daily diary (White, 1975). Subjects were asked to complete the Sleep Questionnaire as a pre-log and as a post-log. Subjects were asked to maintain a sleep diary for two or four weeks. Sleep length had a correlation of .70 between the pre-log questionnaire and the diary. Average weekday bedtime correlated .78 between the pre-log questionnaire estimate and the diary. Average weekend bedtime correlated .66 between pre-log questionnaire and diary. Sleep diary mean weekday wake-up time and questionnaire correlated .74. Average weekend wake-up time and questionnaire estimate correlated .58. Post-log questionnaire and diary correlations were also reported. These correlations tended to be higher, presumably because subjects had been paying attention to their sleep behaviors for two or four weeks. The more

conservative pre-log questionnaire correlations were selected for this study because they more accurately correspond to the method used in this study.

Webb, Bonnet, and Blume (1976) tested a post-sleep inventory to determine construct validity. The researchers found that subjects rated their sleep "good" or "bad" by comparing their sleep with their "usual" night, their sleep over a few weeks or several years, or by comparing their sleep to the way they thought others slept. The scale developed was found to have high construct validity.

Content validity was claimed for the instruments. The Sleep Questionnaire was developed by an expert in the field of sleep research. The questionnaire reflects the literature of sleep research. Following a study of 102 college students, White (1975) concluded that estimates of the expected range of average sleep behavior for a group utilizing the Sleep Questionnaire was valid. .

Items related to adaptations to sleep disturbances were developed in consultation with two sleep research experts. Literature was reviewed to determine recommendations for improving sleep. Items which could be used in the questionnaire were then developed. Sleep difficulties were divided into difficulties getting to

sleep, difficulty staying asleep and awakening earlier than desired. Subjects were asked to indicate which measures they used when they had difficulty at any or all of the three times. Subjects were also asked to rate the effectiveness of strategies they employ when they encounter sleep difficulties.

Demographic data as well as information regarding current health status, recent illnesses, and recent hospitalizations were obtained from the Dunedin Program Questionnaire. This questionnaire is completed annually by all clients of the Dunedin Clinic.

Procedure

Pilot. A pilot study was conducted during the week of September 7, 1987 to test the use of the Sleep Questionnaire with the participants enrolled in the Dunedin Program. All subjects (n=24) who visited the Dunedin Clinic for their annual assessment were asked to complete the questionnaire and mail it to the investigator within two weeks. Fourteen of the subjects who returned the questionnaire to the researcher were interviewed by telephone. Subjects were asked to describe any difficulties they had with the questionnaire, how they rate their sleep, how they compare their sleep to others their age, what they do if they have trouble sleeping, how they define "younger",

and what additional questions they might have asked. Data obtained in the questionnaires and the telephone interviews were compared to determine consistency.

Methodological problems encountered in conducting the pilot study were corrected before the main study began. One question was added to the questionnaire and several questions were modified as a result of this pilot study.

The added question required subjects to indicate whether or not they have a friend or relative who experiences trouble sleeping. Many of the subjects in the pilot did not answer questions about sleep of other elderly persons. This question was added to provide a focus for subjects related to sleep of other elderly persons. It was hoped that this would increase the number of responses to questions about sleep of other elderly. Questions about sleep of others were changed from comparative questions to questions requiring a numeric answer. For example, in the pilot questionnaire subjects were asked "Do you think others your age sleep better, worse, or the same as you do?". This question was changed to "How well do you think others your age sleep?" The choices for responses were; 1) very well, 2) satisfactorily, 3) some problems, 4) poorly, and 5) don't know. This was to increase the consistency of the

questions and to increase the response rate of those items. A "don't know" response was included in all questions related to sleep of others.

Power analysis. A power analysis as described by Marks (1982) and Cohen (1977) was conducted to determine the required number of subjects for this study. A pilot study was conducted on 24 subjects and from the data obtained in the pilot study, it was determined that 39% of the pilot sample chose the response "very well" to describe their sleep at the present time. The value 39 was used as the estimated P (the percentage of observations that fall into a particular category) to determine the number of subjects required for the main study. The confidence coefficient of .95 was chosen. The confidence coefficient "reflects our confidence that the computed interval will contain the parameter of interest" (Marks, 1982, pg. 122). In this study it is 95% probable that the estimated sleep length obtained, for example, will fall within the true, unknown, average sleep length. A bound on error of .06 was selected. To continue with the previous example, a bound on error of .06 means that the estimate of sleep length obtained will be within 6% of the true sleep length. A sample size of 257 was estimated to be needed for the study

(Marks, 1982, pg. 132) based on the return rate experienced in the pilot study.

Main study. The 336 subjects attending the clinic during the time of this study represent 14% of the 2400 subjects currently being seen at the Dunedin Clinic. Clients with physical or psychological problems such as blindness or Alzheimer's disease were excluded. All other clients who presented at the clinic during the time period of the study were invited to participate in this study. The time period was defined to end prior to Thanksgiving and the beginning of the Christmas holidays because of the increased incidence of depression during the Christmas holiday. The relationship between depression and sleep disturbances is well documented.

The Sleep Questionnaire was given to each subject who consented to be included in the study at the completion of his/her annual visit. A total of 336 questionnaires were distributed over a six week interval. The nurse who gave the questionnaire to subjects described the purpose of the study, and encouraged the subject to complete and mail the questionnaire to the researcher within two weeks. Subjects were asked to sign a consent form permitting access to data from their most recent Dunedin Program Questionnaire. Questionnaires for this study were

identified using the same subject number that is used in the Dunedin Program. The subject number was known only to the researcher and the research team of the Dunedin Clinic. Subjects were advised that the same subject number was being used for this study as is used in the main Dunedin Program study. A stamped, addressed envelope was given to subjects for returning the questionnaire to the investigator at her home. Telephone calls were made as reminders to subjects who had not returned their questionnaires within two weeks. A total of 285 questionnaires were returned for a return rate of 84.8%.

Data Analysis

Much of the data are presented using descriptive techniques. The number of subjects who responded to each item is different. The highest number of subjects responded to questions regarding their sleep patterns at present, with fewer subjects responding to questions about their sleep when they were younger, and still fewer subjects responded to items about the sleep of others. Of the 336 questionnaires distributed, 282 were completed and returned in a useable form. Frequencies and percentages of subjects responding are reported.

Several subscales exist within the Sleep Questionnaire. These subscales were used to assess the

rhythmic quality of sleep, sleep patterns, behavioral facilitators or inhibitors of sleep, and affective responses to sleep disorders. These subscales were utilized in making comparisons in data analysis.

CHAPTER IV RESULTS AND DISCUSSION

A pilot study was conducted at the Dunedin Clinic from September 8, 1987 to September 11, 1987. All of the 24 subjects who reported to the clinic were considered for inclusion in the pilot study. Of the 24 subjects who visited the clinic during the time of the pilot study, all but two were given the questionnaire to take home and complete. One blind subject and one subject with Alzheimer's disease were not asked to participate. Eighteen (81.8%) of the 22 subjects who were invited to participate returned the completed questionnaire. The researcher was able to contact 14 of these subjects by telephone.

Subject's self-rating of sleep at time of interview was consistent for 13 of the 14 subjects. One subject rated her sleep as satisfactory on the questionnaire and good during the interview. When asked what they do when they have trouble sleeping, 13 of the 14 subjects interviewed answered the same as they had answered the questionnaire. One subject indicated on the questionnaire that she never had trouble sleeping but in the interview, she answered that when she has trouble sleeping she stays in bed until she falls asleep.

Subjects were less consistent in their rating of others' sleep. Seven subjects rated the sleep of others as compared to their own sleep consistently and five were not consistent in their replies.

Based on the pilot, it was decided to include a question to determine if subjects had a friend who had sleep problems. This was done to provide a focus for subjects and provide a basis for comparison of subjects in the main study. Items about the sleep of others were changed to be consistent with items which immediately preceded them regarding subject's current and past sleep patterns.

Subject Characteristics

A convenience sample of the subjects of the Dunedin Clinic was obtained. A total of 285 subjects returned the questionnaire. Of these, three subjects had not answered any questions and returned blank questionnaires leaving 282 usable questionnaires. Subjects who reported to the Dunedin Clinic during the time of the study ranged in age from 65 to 94 with a mean of 78.1 ($SD=5.1$). The mean age of subjects who returned the completed questionnaire was 78.1 ($SD=5.4$) (see Table 1). The mean age of subjects who did not return the questionnaire was 78.1 ($SD=5.4$) There was a higher percentage of females in both the subjects who returned

Table 1

Age and Gender of Respondents and Non Respondents

	Respondents		Non respondents		Total	
	n	Mean(SD)	n	Mean(SD)	n	Mean(SD)
Age						
Female	165	77.4(5.7)	70	78.1(5.9)	235	77.6(5.7)
Male	87	79.4(4.9)	36	78.2(5.6)	123	79.1(5.0)
Total	252	78.1(5.4)	106	78.1(5.4)	358	78.1(5.1)
Gender	n	%	n	%	n	%
Female	165	46.1	70	19.6	235	65.7
Male	87	24.3	36	10.1	123	34.4
Total	252	60.4	106	29.7	358	100.1 ^a

^aTotal is greater than 100% due to rounding.

the questionnaire and the subjects who did not return the questionnaire. Of the subjects reporting to the Dunedin Clinic at that time for whom demographic data is known, 235 (65.7%) were female and 123 (34.4%) were male.

Fifty (14.0%) of the subjects reporting to the Dunedin Clinic during the time of the study had been hospitalized at least once during the previous year (see Table 2). Three subjects had been hospitalized twice, and one subject had been hospitalized three times within the last year.

The total number of subjects who indicated that they had experienced a heart attack within the last year was 20 (5.6 %). Fifteen (4.2%) of the subjects indicated they had experienced a cerebrovascular accident within the past year. No statistically significant differences were found between those who responded to the Sleep Questionnaire and those who did not on any of the demographic variables evaluated.

Subjects who reported to the Dunedin Clinic during the time of the study included 41 who were entering the study for the first time. Subjects complete a different questionnaire each year they are a part of the Dunedin Program. On questionnaires eight through twelve an item is included in which subjects are asked to rate

Table 2

Illness Related Variables of Respondents and Non Respondents by Gender

	Respondents		Non respondents		Total	
Subjects Hospitalized						
Gender	n	%	n	%	n	%
Female	21	12.7	12	17.1	33	14.0
Male	14	16.1	3	8.3	17	13.8
Total	35	13.9	15	14.2	50	14.0
Heart Attacks						
	n	%	n	%	n	%
Female	6	3.6	7	10.0	13	5.5
Male	6	6.9	1	2.8	7	5.7
Total	12	4.8	8	7.5	20	5.6
Cerebrovascular Accidents						
	n	%	n	%	n	%
Female	8	4.9	5	7.1	13	5.5
Male	1	2.8	1	1.2	2	1.6
Total	9	3.6	6	5.7	15	4.2

their health. In this subsample of 160 subjects, 23 (6.4%) rated their health excellent; 131 (36.6%) rated their health good; 66 (18.4%) rated their health fair; and 6 (1.7%) rated their health poor (see Table 3). Statistically significant differences existed between respondents and nonrespondents to the questionnaire (chi square=14.3 df=2, $p=.007$). Nonrespondents were more likely to rate their health as fair or poor than respondents. Significant differences existed between male respondents and nonrespondents (chi square=15.7 df=3, $p=.004$) with a higher percentage of male respondents rating their health as good, while a greater proportion of male nonrespondents rated their health as fair or poor. No differences were found between female respondents and nonrespondents or between male and female respondents or nonrespondents.

Average daily coffee consumption was reported by subjects. The amount of coffee consumption ranged from none to eight cups per day. The modal response was 1 to 2 cups of coffee per day. Subjects were also asked how much alcohol they ingest. Responses available were none; occasionally; 2-3 cocktails weekly; 1-2 cocktails nightly; three or more cocktails nightly; wine occasionally; and wine daily. One hundred thirteen subjects denied alcohol consumption; 114 indicated they

Table 3

Self Rating of Health by Gender for Respondents and Non Respondents

Gender	Excellent		Good		Fair		Poor	
	n	%	n	%	n	%	n	%
Respondents								
Female	12	7.3	58	35.2	31	18.8	1	.6
Male	6	6.9	44	50.6	12	13.8	-	-
Total	18	7.1	102	40.5	43	17.1	1	.4
Non respondents								
Female	1	1.4	23	32.9	16	22.9	3	4.3
Male	4	11.1	6	16.6	7	19.4	2	5.6
Total	5	4.7	29	27.4	23	21.7	5	4.7
Total Sample								
Female	13	5.5	81	34.5	47	20.0	4	1.7
Male	10	8.1	50	40.1	19	15.5	2	1.6
Total	23	6.4	131	36.6	66	18.4	6	1.7

Chi square for respondents vs non respondents =14.3
 df=3 p=.007. Chi Square for male respondents vs male
 nonrespondents =15.7 df=3 p=.004.

use alcohol occasionally; 27 indicated they drink 2-3 cocktails weekly; 44 indicated they consume 1-2 cocktails nightly; 4 selected three or more cocktails nightly; 39 drink wine occasionally; and 16 drink wine daily.

Chi square statistics were computed for all variables obtained from the Dunedin Program Questionnaire and self-rating of sleep. The only statistically significant relationship was between use of medications that effect sleep and self-rating of sleep. Twenty-two (8.9%) of the subjects for whom background data were available reported using medications that would affect sleep, including sedatives and pain medications used at bedtime (see Table 4). A higher percentage of subjects who reported taking medications which affect sleep also rated their sleep as poor (chi square=10.71, df=3, p=0.013).

Sleep Behavior

Findings are reported within the framework of the objective behavioral theory of sleep. Sleep behavior consists of sleep patterns (sleep latency and length of sleep), sleep structure limited to continuity of sleep, and subjective response to sleep confined to sleep evaluation. Continuity of sleep includes awakenings within sleep and naps.

Table 4

Quality of Sleep and Use of Medications That Affect Sleep

Quality of Sleep	Use of Medications					
	Yes		No		Total	
	n	%	n	%	n	%
Very Well	3	13.6	65	28.9	68	27.5
Fairly Well	5	22.7	84	37.3	89	36.0
Poorly	14	63.6	67	29.8	81	32.8
Some Problems	-	--	9	4.0	9	3.6
Total	22	8.9	225	91.1	247	99.9

Note. Does not equal 100% due to rounding.

Sleep latency. In response to an item regarding sleep latency, subjects reported an average length of time to get to sleep as 26.2 ($SD=25.7$) minutes. Great variability is seen in this response with a range from one to 150 minutes to get to sleep (see Table 5). The mean sleep latency reported by Webb and Schneider-Helmert (1984) for subjects 60 to 69 years of age was 15 minutes.

The mean sleep latency subjects reported when they were younger was much shorter with a mean of 10.6 minutes ($SD=8.5$). Sleep latency subjects reported for their younger years was also less variable. The mean sleep latency of peers was very similar to the subjects' current sleep latency with a mean of 28.7 minutes ($SD=24.1$). It must be noted however that far fewer subjects estimated sleep latency of peers than reported their own present or past sleep latency. The finding of differences between now and younger supports earlier findings (Agnew & Webb, 1971; Hayter, 1983; and Webb & Schneider-Helmert, 1984) that sleep latency is longer in the elderly.

Sleep length. The average sleep length reported by subjects was 7.1 hours (see Table 5). This varied little from the report of sleep length when younger (7.5) and the sleep length of peers (7.0).

Sleep continuity. In addressing the concept of continuity of sleep, subjects were asked the frequency and duration of awakenings within sleep and the frequency and duration of naps. Subjects reported awakening 0 to 10 times per night with an average of 2.1 ($SD=1.3$) (see Table 6). Subjects reported fewer awakenings when they were younger ($Mean=.4$, $SD= 1.0$). Previous studies (Hayter, 1983; Tune, 1969; and Webb 1982a) have reported an increase in the number of wakenings during the night in elderly subjects. In an observational study of elderly subjects, Webb & Swineburne (1971) found that elderly subjects awoke 2 to 5 times per night. Those subjects who reported the number of times awake for peers estimated a mean of 2.1 awakenings ($SD =1.9$), which is very similar to the mean number of times awake per night as subjects reported for themselves.

Subjects report a mean time awake after sleep onset of 30.4 minutes ($SD=39.4$). Again a large variability is seen with a range from no time awake after sleep onset to a total of 3 hours spent awake after sleep onset. Subjects recalled an average of 4.2 minutes awake after sleep onset when they were younger ($SD=19.1$). Thirty-one subjects estimated the amount of time peers spend awake after sleep onset as 50.2 minutes ($SD=40.1$).

Table 5

Sleep Patterns Now, When Younger, and of Peers

Age Group	n	Mean(SD)	Range
Sleep latency (minutes)			
Now	269	26.2(25.7)	1-150
Younger	187	10.6(8.5)	.5-60
Peers	64	28.7(24.1)	1-120
Sleep length (hours)			
Now	279	7.1(1.2)	4-10
Younger	235	7.5(0.9)	4-12
Peers	71	7.0(2.1)	4-10.5

Great variability is observed in estimates of the length of time awake after sleep onset when subjects were younger as well as estimates of wake time for peers. Time awake after sleep onset was reported as shorter when younger and longer for peers. Bixler et al., (1984) report an increase in both the frequency of night awakenings and the total time awake after sleep onset.

The frequency and length of naps was explored. Subjects were also asked to indicate the number of hours per week they spent taking naps. Two hundred sixty-seven subjects answered the item related to length of current naps (see Table 6). The mean number of hours spent taking naps was 3.4 hours per week ($SD=3.8$). The mean number of hours reported by subjects when they were younger was .7 hours per week ($SD=2.9$). The finding of an increased number of naps is consistent with findings of a study conducted by Hayter (1983). Tune (1969) reported an increased number of naps in older subjects. In an observational study of elderly subjects Webb & Swineburne (1971) found that all subjects took naps.

More subjects responded to items regarding current naps than responded to items dealing with past nap patterns or nap patterns of others their age. One hundred ninety-four subjects (71.6%) reported that currently take naps (see Table 7). Forty-two (17.1%

Table 6

Continuity of Sleep Now, When Younger, and of Peers

Age Group	n	Mean(SD)	Range
Times per night awake			
Now	277	2.1(1.3)	0-10
Younger	178	.4(1.0)	0-10
Peers	69	2.1(1.9)	0-15
Minutes awake after sleep onset			
Now	228	30.4(39.4)	0-180
Younger	140	4.2(19.1)	0-210
Peers	31	50.2(40.1)	0-120
Hours of naps per week			
Now	267	3.4(3.8)	0-21
Younger	185	.7(2.9)	0-21
Others	81	6.2(4.9)	0-21

reported having taken naps when they were younger, and 98 (86.0%) indicated that others their age take naps.

Sleep evaluation. To explore the concept of subjective response to sleep behavior subjects were asked to evaluate how well they sleep now, the amount of sleep they get now, how rested they feel when they awaken, how much they enjoy sleep, and how light or deep they consider their sleep. Overall, 76 (27.4%) subjects indicated that they sleep very well, 99 (35.7%) satisfactorily, 91 (32.9%) some problems, and 11 (4.0%) indicated that they sleep poorly (see Table 8). When asked how well they slept when they were younger, 190 asked to indicate how well they felt others their age sleep, and 141 (50.2%) indicated that others their age have some problems sleeping. Statistically significant differences were found between self-ratings of current and former sleep ($\chi^2=90.7$, $df=3$, $p=0.0002$) and between ratings of current sleep and sleep of peers ($\chi^2=44.6$, $df=3$, $p=0.000$). The tendency of subjects to report better sleep when they were younger is consistent with findings reported by Karakan, et al., (1979) from a study which involved subjects ranging in age from 18 to over 70. In that study, subjects in the

Table 7

Subjects Taking Naps Now, When younger, and Peers

Age Group	no naps		naps	
	n	%	n	%
Now	77	28.4	194	71.6
Younger	204	82.9	42	17.1
Peers	6	5.2	98	86.0

Chi Square now vs younger=209.5 df=1 p=0.0000.

Chi Square now vs others=21.8 df=1 p=0.0000.

Table 8

Evaluations of Sleep Now, When Younger, and of Peers

Response	now		younger		others	
	n	%	n	%	n	%
Quality of Sleep						
Very Good	76	27.4	190	67.4	6	2.1
Satisfactory	99	35.7	71	25.2	42	14.9
Some Problems	91	32.9	8	2.8	141	50.2
Poor	11	4.0	4	1.4	10	3.6
Total	277	100.0	273	96.8 ^a	199	70.8 ^b
Amount of Sleep						
About Enough	245	87.9	226	81.6	88	31.9
Not Enough	25	8.9	27	9.7	16	5.7
Too Much	9	3.2	1	.4	15	5.4
Total	279	100.0	254	91.7 ^c	119	43.0 ^d

Note. Does not equal 100% because don't know and don't remember responses not shown. ^aChi square now vs younger=90.7 df=3 p=0.0000. ^bChi square now vs others=44.6 df=3 p=0.0000. ^cchi square=20.2 df=2 p=0.0000. ^dChi square=38.3 df=2 p=0.0000.

Table 8--continued

Response	now		younger		others	
	n	%	n	%	n	%
Feel rested upon awakening						
Almost Always	164	58.8	205	73.0	25	8.9
Often	71	25.4	29	10.3	47	16.7
Occasionally	35	12.5	9	3.2	39	13.9
Almost Never	9	3.2	7	2.5	4	1.4
Total	279	100.0	250	89.0 ^e	115	40.9 ^f
Enjoyment of sleep						
Much	166	59.3	190	67.9	41	14.7
Moderately	104	37.1	44	15.7	47	16.8
A Little	9	3.2	2	.7	3	1.1
Not At All	1	.4	-	-	1	.4
Total	280	100.0	236	84.3 ^g	92	33.0 ^h

Note. Does not equal 100% because don't know and don't remember responses not shown. ^eChi square now vs younger=19.5 df=3 p=0.0002. ^fChi square now vs others=46.5 df=3 p=0.0000. ^gChi square=163.9 df=3 p=0.0000. ^hChi square=46.0 df=3 p=0.0000.

Table 8--continued

Response	now		younger		others	
	n	%	n	%	n	%
Depth of Sleep						
Very Deep	12	4.3	46	16.6	1	.4
Deep	145	52.2	152	54.9	9	3.3
Light	113	40.6	45	16.2	55	20.0
Very Light	8	2.9	4	1.4	3	1.1
Total	278	100.0	247	89.1 ⁱ	68	24.8 ^j

Note. Does not equal 100% because don't know and don't remember responses not shown. ⁱChi square now vs younger=46.0 df=2 p=0.0000. ^jChi square now vs others=59.8 df=2 p=0.0000.

older age groups tended to report more frequent problems with sleep.

An original question in this research, addressing the issue of whether subjects who experienced sleep disturbances when younger continue to exhibit sleep disturbances when they are older was not answered. Only 12 subjects (4.2%) were found to have experienced sleep problems when they were younger. The more significant finding was the increased number of subjects who reported sleep problems now ($n=102$, 36.9%).

In response to questions about the amount of sleep they get, 245 (87.9%) reported getting enough sleep, 25 (8.9%) indicated they do not get enough sleep, and 9 (3.2%) reported getting too much sleep. Subjects were asked about the amount of sleep they got when they were younger. Two hundred twenty-six (81.6%) indicated they got about enough and 27 (9.7%) indicated they had not gotten enough sleep when they were younger. Fewer subjects answered the item regarding sleep of others. Of those who answered, 88 (31.9%) selected about enough. Statistically significant differences were found between evaluation of the amount of current sleep and the amount of sleep when younger ($\chi^2=20.2$, $df=2$, $p=0.0000$). Significant differences were found between ratings of

amount of sleep subjects got and the amount of sleep others obtained (chi square=38.3, df=2, $p=0.0000$).

One hundred sixty-four subjects (58.8%) indicated they almost always feel rested when they awaken, 71 (25.5%) indicated they often feel rested when they awaken, 35 (12.5%) chose occasionally, and 9 (3.2%) indicated that they almost never feel rested when they awaken. Two hundred five subjects (73.9%) indicated they almost always felt well rested upon awakening when they were younger. Analysis of data revealed statistically significant differences between self-report of feeling rested upon awakening now and when younger (chi square =19.5, df=3, $p=0.0002$). Twenty-five subjects (8.9%) indicated that others their age feel rested upon awakening. Significant differences were found between self-rating of feeling rested upon awakening and rating of others on this item (chi square=46.5, df=3, $p=0.0000$).

Although 36.9% of respondents reported having some problems with sleep or sleeping poorly, only 15.7% of respondents indicated they occasionally or almost never felt rested upon awakening. This supports findings reported by McGhie and Russell (1962) that the elderly did not report morning tiredness despite sleep changes.

When asked how much they enjoy sleep, 166 (59.3%) of subjects selected much, 104 (37.1%) chose moderately, 9 chose a little, and only one subject replied not at all. When asked how much they enjoyed sleep when they were younger, 190 (67.9%) chose much. When asked how much others their age enjoy sleep, 41 (14.7%) indicated much, and 47 (16.8%) selected moderately. Statistically significant differences were found between reports of enjoyment of sleep now as compared to younger ($\chi^2=163.9$, $df=3$, $p=0.0000$) and between subjects' own enjoyment sleep and others enjoyment of sleep ($\chi^2=46.5$, $df=3$, $p=0.0000$)

The concept of depth of sleep was explored by asking subjects to rate the depth of their sleep now, when they were younger, and of others their age. Twelve subjects (4.3%) rated their sleep as very deep, 145 (52.2%) rated their sleep deep, 113 (40.6%) indicated that they consider their sleep light, and 8 (2.9%) rated their sleep as very light. When asked how deep their sleep was when they were younger, 152 (54.9%) selected deep. When asked to indicate how deep the sleep of others their age is, 55 (20.0%) selected light.

Data analysis revealed statistically significant differences between self-report of depth of sleep now and depth of sleep when younger ($\chi^2=46.0$, $df=2$,

$p=0.0000$) and depth of sleep now and depth of sleep of peers ($\chi^2=59.8$, $df=2$, $p=0.0000$). Statistically significant relationships were found between all variables related to subjective response to sleep using Spearman's ρ (see Table 9).

Subjects consistently rated their sleep as having been better when they were younger. Subjects reported having slept better, gotten enough sleep, felt rested upon awakening, enjoyed sleep more, and experienced deeper sleep. These findings lend support to the developmental aspect of the Objective Behavioral Theory of Sleep (Webb, in press) just as the findings of sleep pattern changes lend support to this aspect of the theory.

The pattern of self-evaluation of current sleep and the sleep of peers was less clear when considering subjective evaluation of sleep. Many subjects chose the don't know response in relation to the sleep of others their age. Statistically significant differences were found, but they must be interpreted with caution. Fifty percent of subjects who responded to the item regarding how well others their age sleep at night responded that their peers have some problems. This is a higher rate than subjects indicated that they themselves have

Table 9

Correlations Matrix for Subjective Responses to Sleep
and Circadian Subscale

Subscale	Sleep Rating	Feeling Rested	Enjoy Sleep	Sleep Depth	Circadian Tendency
Sleep Rating	1.000* .000**				
Feeling Rested	.429 .000	1.000 .000			
Enjoy Sleep	.147 .014	.156 .009	1.000 .000		
Sleep Depth	.433 .000	.344 .000	.161 .007	1.000 .000	
Circadian Tendency	.218 .008	.226 .000	.112 .180	.150 .071	1.000 .000

*Spearman's rho

**Significance

problems sleeping. This adds more evidence that the elderly expect sleep problems as they age.

Circadian tendencies. In order to evaluate circadian tendencies, the placement of sleep within the twenty four hour cycle, subjects were asked to respond to items regarding their usual bedtime and wake up time. Subjects reported going to bed from 1800 (6:00 P.M.) to 0100 (1:00 A.M.) with an average bedtime of 2246 (10:46 P.M.) (see Table 10). This also varied little from the estimated bedtime of peers and bedtime when they were younger. Subjects report an average weekday wake up time of 0651 (6:51 A.M.) an average weekend wake up time of 0709 (7:09 A.M.). There is little difference reported between average weekday and weekend wake up time now, however there is a difference between weekend wake up time now and weekend wake up time when younger.

To further assess circadian tendencies, questions were asked to determine if subjects go to sleep at the same time, wake up at the same time, and use an alarm clock. In response to the item dealing with going to sleep at the same time, 44 (15.7%) indicated they always go to bed at the same time and 195 (11.8%) stated they usually go to sleep at the same time (see Table 11). Twenty-six subjects (9.3%) indicated that they always went to sleep at the same time when they were younger,

Table 10

Circadian Tendencies Now, When Younger, and of Peers

Age Group	n	Mean(SD)	Range
Weekday bedtime			
Now	269	2246(1.7)	1800-0100
Younger	176	2242(1.3)	1930-0100
Peers	92	2209(1.6)	2000-0100
Weekend bedtime			
Now	260	2224(2.0)	1800-0200
Younger	148	2200(3.3)	2000-0200
Peers	77	2154(2.0)	1800-2400
Weekday wake up time			
Now	269	0651(1.0)	0230-0930
Younger	200	0629(0.7)	0500-0900
Peers	76	0709(0.7)	0530-0845
Weekend wake up time			
Now	273	0657(1.0)	0300-1000
Younger	180	0842(1.1)	0500-1200
Peers	53	0724(0.9)	0530-0930

Table 11

Circadian Tendency of Sleep of Elderly Subjects Now,
When Younger, and Others

Frequency	now		younger		others	
	n	%	n	%	n	%
Going to sleep at the same time						
Yes	44	15.7	26	9.3	21	7.5
Usually	195	69.6	108	38.6	92	32.9
Sometimes	33	11.8	91	32.5	17	6.1
Never	8	2.9	32	11.4	1	.4
Total	280	100.0	257	91.8 ^a	131	46.9 ^b
Awakening at the same time						
Yes	61	22.0	66	23.9	19	7.0
Usually	169	61.0	122	44.2	65	23.8
Sometimes	43	15.5	30	10.9	21	7.7
Never	4	1.5	10	3.6	2	.7
Total	277	100.0	228	82.6 ^c	107	39.2 ^d

Note. Columns do not equal 100% because don't know and don't remember responses have not been included.

^aChi Square now vs younger=48.8 df=3 p=0.000. ^bChi Square now vs others=28.5 df=3 p=0.000. ^cChi Square now vs younger=9.7 df=3 p=0.02. ^dChi Square now vs others=37.3 df=3 p=0.000.

Table 11--continued

Frequency	now		younger		others	
	n	%	n	%	n	%
Using an alarm clock or radio to help wake up						
Almost Always	24	8.7	139	50.1	8	2.9
Often	15	5.4	42	15.2	21	7.7
Occasionally	84	30.4	26	9.4	47	17.2
Almost Never	153	55.4	59	21.3	23	8.4
Total	276	99.9	266	96.0 ^a	99	36.2 ^b

Note. Columns do not equal 100% due to rounding and omitting don't know and don't remember responses.

^aChi Square now vs younger=142.5 df=3 p=0.000. ^bChi Square now vs others=285.5 df=3 p=0.000.

while 108 (38.6%) indicated they usually went to sleep at the same time when they were younger. Chi square analysis of data revealed statistically significant differences between present and previous sleep patterns with subjects reporting more consistency in going to bed at the same time now than when they were younger.

Subjects were also asked if they always awaken at the same time. Sixty-one subjects (22%) indicated they always awaken at the same time; 169 (61.0%) indicated they usually awaken at the same time; 43 (15.5%) stated they sometimes awaken at the same time, and 4 (1.5%) indicated they never awaken at the same time (see Table 11).

Sixty-six subjects (23.9%) indicated they always got up at the same time when they were younger, and 122 (44.2%) indicated they usually got up at the same time when they were younger. Chi Square analysis reveals statistically significant differences for this item between now and younger. The greatest difference is evident between the percentage of subjects who reported that they usually awaken at the same time now than when they were younger, with a higher percentage of subjects reporting they usually awaken at the same time now.

Large differences are seen in the rate of use of an alarm clock or radio to awaken between what subjects

reported they were doing at the time of the study and what they reported doing when they were younger. One hundred fifty-three subjects (55.4%) reported they almost never used an alarm clock or radio to help them awaken now, while 139 (50.1%) indicated that they had almost always used an alarm clock when they were younger ($\chi^2=142.5$, $df=3$, $p=.000$). Differences between what subjects report they are doing versus what they think others their age are doing are not so dramatic, however, differences between both of these categories are statistically significant ($\chi^2=285.5$, $df=3$, $p=.000$).

The concept of circadian tendencies was further explored by utilizing the circadian subscale imbedded within the Sleep Questionnaire to make comparisons with other items. Data from the items regarding bedtime, wake up time, and use of an alarm clock comprised the circadian subscale. This subscale included items related to bedtime (Do you go to bed at the same time now? and How many days per week do you go to bed more than one hour earlier or later than your usual bedtime?); wake up time (Do you always awaken at the same time now? How many days per week do you awaken more than one hour earlier or later than usual?); and the regularity of the use of an alarm. All items

comprising the circadian subscale were found to significantly correlated with the circadian score on the circadian subscale (see Table 12). The score obtained on the circadian subscale was also found to be significantly related to several other items on the Sleep Questionnaire. It is of interest to note that this score is related to current and past sleep patterns as well as to ratings of sleep of others.

The score on the circadian subscale was used to investigate the relationship between circadian tendencies and quality of sleep variables. The circadian quality of sleep was found to be significantly related to rating of sleep and the reported frequency of feeling rested upon awakening (see Table 9).

Sleep disturbances. Several items addressed the issue of sleep disturbances directly. Subjects were asked how often they have trouble getting to sleep as quickly as they would like, how many days per week they usually wake up earlier than they expect and are unable to return to sleep, and if they have sought help from either a health care professional or a friend or relative for sleep problems. In response to the item which addressed trouble getting to sleep as quickly as they would like, 71 subjects (25.6%) indicated they almost never have difficulty getting to sleep, 137

Table 12

Relationship Between Circadian Tendencies of Sleep
and Quality of Sleep and Other Variables

Variable	r	p	n
Going to bed at same time	.21	.05	87
Waken at the same time	.31	.004	87
Frequency of use of alarm clock	.30	.004	87
Going to bed earlier or later	.48	.0001	87
Waking up earlier then expect	.77	.0001	87
Going to bed earlier or later (younger)	.65	.0001	87
Others going to bed earlier or later	.67	.009	14
Waking up earlier then expect (younger)	.36	.002	71
Others waking up earlier than expect	.71	.004	14
Frequency of trouble getting to sleep	.52	.0001	85
Times awaken per night	.37	.0004	87
Minutes awake per night	.29	.02	66

(49.5%) stated they occasionally have trouble getting to getting to sleep, and 19 (6.9%) indicated they always have trouble getting to sleep (see Table 13).

Subjects were also asked how often they had trouble getting to sleep when they were younger and how often they think others their age have trouble getting to sleep. One hundred sixty-six (60.8%) replied they almost never had trouble getting to sleep when they were younger. The most frequent responses given in relation to others their age were occasionally ($n=38$, 14.1%) and often ($n=43$, 16.0%). Statistically significant differences were found between responses to items about trouble sleeping now and trouble sleeping when younger ($\chi^2=203.7$, $df=3$, $p=0.0000$) as well as trouble sleeping now and others their age experiencing trouble ($\chi^2=51.1$, $df=3$, $p=0.0000$).

Spearman's rho correlations were performed to determine the relationship between sleep latency and other qualitative sleep variables. A positive correlation was found between sleep latency and overall evaluation of sleep, feeling rested upon awakening and circadian tendencies (see Table 14). When sleep latency was reported as short, the evaluation of sleep was more likely to be positive, the score on the circadian subscale was smaller, and the subject was more likely to

Table 13

Frequency of Trouble Getting to Sleep Now, When
Younger, and Others

	n	%	n	%	n	%
	now		younger		others	
Almost Never	71	25.6	166	60.8	5	1.9
Occasionally	137	49.5	59	21.6	38	14.1
Often	50	18.1	7	2.6	43	16.0
Almost Always	19	6.9	2	.7	5	1.9
Total	277	100.0	234	85.7 ^a	91	33.9 ^b

Note. Does not equal 100% because don't know and don't remember responses not shown.

^aChi Square now vs younger =203.7 df=3 p=0.000. ^bChi Square now vs others = 51.1 df=3 p=0.000.

Table 14

Relationship Between Sleep Problems and Subjective
Evaluation of Sleep Using Spearman's rho

Subjective evaluation of sleep	r	p	n
Sleep latency			
Overall evaluation of sleep	.58	.0001	151
Feeling rested upon awakening	.43	.0001	153
Depth of sleep	-.35	.0001	153
Number of times awake			
Overall evaluation of sleep	.37	.0001	161
Feeling rested upon awakening	-.32	.0001	163
Depth of sleep	-.24	.0025	162
Length of time awake			
Overall evaluation of sleep	.58	.0001	123
Feeling rested upon awakening	-.38	.0001	124
Depth of sleep	-.23	.0025	162

report feeling rested upon awakening. A negative correlation was found between sleep latency and depth of sleep. The longer the sleep latency, the more likely the subject was to report light sleep.

Subjects were also asked how many times they awaken during the night and how long it takes them to get back to sleep. Responses to these items have been addressed earlier. Positive correlations were found between both the frequency and duration of night awakening and overall evaluation of sleep, rhythmic quality of sleep, and feeling rested upon awakening. Negative correlations were found between depth of sleep and both frequency and duration of wakefulness after sleep onset.

Early morning awakening was addressed by asking subjects how often they wake up earlier than they would like and are unable to return to sleep. One hundred thirteen (40.0%) subjects indicated they never have this problem. Most of those who reported they do wake up earlier than they would like indicated that this occurs once or twice a week ($n=116$, 42.7%). Thirty-five subjects (12.9%) indicated they have this problem 3 to 4 times per week and 12 subjects (4.4%) experience this problem 5 to 7 times per week.

Help-seeking. In order to assess help-seeking for sleep disturbances, subjects were asked if they had

sought help from health care professionals or friends and relatives for trouble sleeping. Thirteen (4.9%) indicated they had sought help from a health care professional and 3 (1.1%) had sought help from family or friends. One hundred seventeen subjects indicated they do not have trouble sleeping in response to these items (see Table 15).

Behavioral inhibitors of sleep. To explore the concept of behavioral inhibitors of sleep, subjects were asked to select items they felt might be affecting their overall sleep. They were then asked to rate the effectiveness of various items dealing with overall sleep that they might have tried. Emotional stress, caffeine intake, pain, going to bed too early, lack of exercise, and naps were cited as problem areas by greater than 25% of subjects who responded to that item (see Table 16). While 67 subjects indicated that emotional stress may have been affecting their overall sleep behavior, only 24 indicated that reducing emotional stress worked very well or fairly well in improving the quality of their sleep (see Table 17). Three subjects indicated that reducing emotional stress worked poorly or was no help. Perhaps subjects who indicated emotional stress was affecting their sleep, but did not respond to effectiveness of reducing

Table 15

Frequency of Help Seeking for Sleep Problems From Health Professionals and Peers

Response	n	%	n	%
	health professionals		peers	
Yes	13	4.9	3	1.1
No (but trouble sleeping)	136	50.7	148	55.4
No (no trouble sleeping)	119	44.4	116	43.4
Total	268	100.0	267	99.9

Note. Totals do not equal 100% due to rounding.

Table 16

Behavioral Inhibitors of Overall Sleep Patterns

Inhibitor	Yes		No	
	n	%	n	%
Emotional stress	67	57.3	50	42.7
Caffiene	54	46.2	63	53.8
Pain	52	34.8	58	38.9
Bed too early	44	40.7	64	59.3
Lack of exercise	42	40.4	62	59.6
Naps	38	36.9	65	59.6
Wake up too late	14	11.2	64	51.2
Bed too late	10	13.2	66	86.8

Table 17

Subjects' Evaluations of Effectiveness of Facilitators
for Overall Sleep Patterns

Facilitator	Works well		Works poorly	
	n	%	n	%
Decrease caffiene	38	97.4	1	2.5
Relieve pain	32	86.5	3	8.1
Decrease stress	24	88.9	3	11.1
Decrease naps	19	82.6	4	17.4
Increase exercise	19	90.5	2	10.0
Awaken earlier	4	100.0	-	-
Go to bed earlier	3	75.0	1	25.0
Go to bed later	1	33.3	2	66.6

emotional stress were unable to reduce their levels of emotional stress, or have not attempted to do so. Fifty-four subjects indicated that they felt caffeine intake might be affecting their overall sleep, and 38 subjects indicated that reducing caffeine intake worked very well or fairly well. One subject indicated that reducing caffeine intake worked poorly or was no help.

Fifty-two subjects responded they felt pain was affecting their overall sleep behavior. Thirty-two subjects indicated that relieving pain worked well in improving their sleep behavior. Three subjects indicated that relieving pain worked poorly.

Lack of exercise was indicated as affecting overall sleep behavior by 42 subjects. Nineteen subjects indicated that increasing exercise worked well in helping overall sleep behavior. Two subjects indicated increasing exercise worked poorly.

Thirty-eight subjects indicated that naps might be a factor in their overall sleep behavior. Nineteen subjects stated that decreasing naps worked well in improving their overall sleep behavior. Four subjects indicated that decreasing naps worked poorly.

Behavioral facilitators and inhibitors of sleep.

In addition to overall sleep behavior three areas of difficulty sleeping were assessed separately. These

three areas were (1) difficulty falling asleep; (2) difficulty staying asleep; and (3) waking up in the morning earlier than desired and being unable to return to sleep. Subjects were first asked to respond to an item that addressed the frequency with which they employed various facilitators or inhibitors with each category of disturbance. A second item addressed how well those facilitators or inhibitors worked. Behavioral facilitators included in the items were relax, read, listen to the radio, take a pain pill, pray, count sheep, and think of something else. Behavioral inhibitors included get out of bed and do something, watch TV, take a sleeping pill, drink alcohol, and talk to someone.

The facilitators subjects always use when they experience difficulty getting to sleep were: try to relax, read, pray, think of something else, and listen to the radio (see Appendix B). Seventy subjects indicated they never have trouble getting to sleep at night. The facilitators most frequently identified as working well or very well were read, try to relax, listen to the radio, pray, and think of something else.

When subjects were asked to indicate what they do when they wake up at night and can't get back to sleep, ninety-seven responded that they never wake at night

without being able to get back to sleep. The facilitators most frequently identified as always used included read, try to relax, listen to the radio, pray, and think of something else. Inhibitors frequently used included getting up and do something, and watching television. The facilitators most often identified as working well or very well were read, try to relax, listen to the radio, and pray. The inhibitor of sleep, getting up and doing something, was also found to be effective in dealing with waking up at night and being unable to get back to sleep. Subjects were also asked to indicate what they do if they wake up in the morning earlier than they like. Sixty-seven subjects indicated that they never wake up in the morning earlier than they like without being able to get back to sleep. The facilitators used most frequently were try to relax, read, listen to the radio, and count sheep. The inhibitor of getting up and doing something was also frequently used. The facilitators most frequently indicated as working well or very well included read, and try to relax. Getting up and doing something was also found to be an effective strategy.

Affective response to sleep disturbances. To explore the concept of affective responses to sleep disturbances, subjects were asked how they feel when

they don't fall asleep as quickly as they would like, wake up at night and can't get back to sleep, or wake up in the morning earlier than they would like. Sixty-five subjects indicated they always fall asleep as quickly as they like, 50 indicated that they never wake up at night and are unable to return to sleep, and 52 subjects indicated that they never wake up in the morning earlier than they like. As can be seen in Table 18 the most frequent response in all three instances indicated that subjects accepted the sleep disturbance. Of those subjects who reported having difficulty getting to sleep at night. 114 (42.7%) indicated they accepted the disturbance. One hundred twenty-one subjects (46.5%) of those who reported waking up at night and having difficulty returning to sleep reported they accepted the disturbance, and 153 (56%) of subjects who reported awakening earlier in the morning than they would like reported they accept the disturbance. The next most frequent response selected by subjects who did not fall asleep as quickly as they liked at night (n=47, 17.6%) and those who woke up at night without being able to get back to sleep (n=50, 19.2%) was that they feel frustrated. Thirty-two subjects who reported having difficulty getting to sleep, 32 subjects who wake up at night and have difficulty returning to sleep, and 20

Table 18

Affective Response to Difficulty Falling Asleep,
Awakening During the Night, and Early Morning Awakening

Reactions	Falling Asleep		Wake during the night		Wake too early	
	n	%	n	%	n	%
Not a Problem	65		50		52	
Accept	114	42.7	121	46.5	153	56.0
Frustrated	47	17.6	50	19.2	9	3.3
Tired	32	11.9	32	12.3	20	7.3
Don't think about	31	11.6	27	10.4	45	16.5
Depressed	19	7.1	10	3.8	5	1.8
Worried	10	3.7	7	2.7	1	.3
Angry	8	3.0	5	1.9	7	2.5
Happy to have more time	6	2.2	8	3.1	33	12.1
Total	267	99.8	260	99.9	273	99.3

Note. Columns do not equal 100% due to rounding.

subjects who woke up earlier in the morning than they liked, indicated that they felt physically tired when this occurred. Some subjects do not think about their sleep disturbance. Forty-five subjects reported waking up in the morning earlier than they would like, 31 subjects who reported having difficulty getting to sleep, and 27 subjects who woke up at night indicated they don't think about it. Thirty-three subjects who reported waking up earlier than they like in the morning reported they were happy to have more time.

Summary

Data obtained in this research were analyzed to determine the relationship between current sleep behavior, recalled sleep behavior when younger, and perceived sleep behavior of others. Analysis of background data as related to sleep revealed a statistically significant relationship between overall evaluation of sleep and use of medications that affect sleep. Analysis of overall sleep behavior revealed that subjects reported their sleep behavior when they were younger in a more positive light than their current sleep behavior. Subjective evaluations of sleep revealed a similar pattern.

Sleep patterns appear to have great variability. The mean length of time to get to sleep is longer now (26.2 minutes) than when subjects were younger (10.6 minutes). The number of reported awakenings during the night increased from an average of .4 times per night to 2.1 times per night. The amount of time spent awake after sleep onset also increased from a mean of 4.2 minutes awake after sleep onset when younger, to a mean of 30.4 minutes spent awake now. More subjects report taking naps now than when they were younger. Naps are also longer now than when subjects were younger.

In relation to the circadian quality of sleep, findings indicated that subjects go to bed and get up at the same time more frequently now than when they were younger. Differences between alarm clock usage when younger and now are dramatic with the majority of subjects reporting frequent use of an alarm clock when younger and the majority of subjects reporting not using an alarm clock now. Statistically significant relationships exist between circadian tendencies and evaluations of sleep.

Sleep disturbances were approached from a global perspective as well as from the perspective of specific problem areas including difficulty getting to sleep, difficulty maintaining sleep, and early morning

awakening. Sleep disturbances in all three areas were found to be related to overall evaluation of sleep.

The help-seeking behavior of subjects to sleep disturbances was analyzed. Few subjects sought help for sleep disturbances from professionals, family or friends. The most frequently selected affective response to sleep disturbances indicated that subjects accepted sleep disturbances when they occurred. Behavioral facilitators frequently employed included reading, trying to relax, listening to the radio, and praying. Getting up and doing something, a behavioral inhibitor of sleep, was also frequently employed in dealing with sleep disturbances.

CHAPTER V SUMMARY AND RECOMMENDATIONS

The purpose of this research is to determine the relationship between self-report of sleep behavior among non-institutionalized elderly subjects and their expectations regarding sleep. Subjects were asked to answer questions about their current sleep patterns, sleep patterns when they were younger, and the sleep patterns of others. Sleep facilitators and sleep inhibitors were explored as well as help-seeking behavior and affective responses to disturbances in sleep patterns.

Many of the findings regarding sleep patterns supported previous findings and helped to validate the objective behavioral theory of sleep (Webb, in press). Developmental stages have been explored previously by Webb (1982b). Webb (1982a) was able to re-record the sleep of five of sixteen original subjects fifteen years later and found evidence for intrasubject consistency across time in number of awakenings during the night, sleep latency, and stage percentages. This is the only developmental study of sleep behaviors to date. The present study extends the objective

behavioral theory of sleep in this area through the use of the retrospective portion of the questionnaire.

Findings related to sleep behavior support the findings of previous studies. Sleep patterns (sleep latency and sleep length), sleep continuity, and sleep evaluation have been explored previously. Findings from this study are consistent with other studies and thus help to confirm earlier findings.

Behavioral facilitators and inhibitors of sleep have not been previously explored. This study contributes to the objective behavioral theory of sleep by investigating sleep facilitators and inhibitors common to the elderly. The effectiveness of strategies used to deal with sleep inhibitors is also explored in this study.

The affective reactions of subjects to sleep disturbances has not been previously explored. This study contributes to the development of knowledge in the area of subjects' reactions to sleep disturbances.

Blau (1964) described the role of expectation in defining a condition as a problem. Individuals determine if a condition is a problem by making comparisons with previous experiences and experiences of others. In this study, responses to items related to sleep pattern variables showed less disturbed sleep

among subjects when they were younger. Subjects report their sleep to have changed both qualitatively and quantitatively from their earlier years. Subjects' sleep behavior is more similar to sleep behavior of peers than to subjects' sleep when they were younger. Statistically significant differences were found on all items related to the quality of sleep when comparing subjects' current sleep to previous sleep and sleep of peers. Current sleep was consistently rated poorer on evaluative items than either sleep when younger or sleep of peers. In comparing what they feel others their age are experiencing, the elderly may perceive that the changes they are experiencing in their sleep are normal age related changes.

Since the elderly in this study describe the sleep of others their age as similar to their own, they are unlikely to define sleep disturbances as problems. This may help to explain the finding that few subjects reported having sought help for sleep disturbances. Parsons (1951, p. 431) defines illness as "a state of disturbance in the "normal" functioning of the individual. Since the elderly seem to view sleep pattern changes as normal, they do not adopt the sick role and seek help.

In keeping with the concept of developmental stages in Webb's objective behavioral theory of sleep, a pattern of change with age was evident in response to items regarding sleep patterns and qualitative aspects of sleep. Longitudinal studies are needed to shed more light on this area of sleep research. Data obtained in this study must be interpreted with caution because the subject is asked to recall previous sleep patterns. The recall of past events can be affected by many factors including memory and intervening experiences. Responses to items regarding sleep patterns and items addressing qualitative aspects of sleep showed a pattern of change with age. This lends support to the developmental aspect of the objective behavioral theory of sleep.

The most frequently reported behavioral inhibitor of sleep is emotional stress. A discrepancy was found between the number of subjects who identified emotional stress as an inhibitor of sleep and those who have found dealing with stress an effective strategy for improving sleep. One explanation for this occurrence is that the elderly expect emotional stress as they age and do not develop effective strategies for dealing with stress. Perhaps the elderly need assistance in identifying stressors and in developing strategies for dealing with emotional stress. Dealing with emotional stress might

be beneficial in improving the overall quality of the lives of the elderly and may not be limited to improving sleep. Behavioral facilitators employed to alleviate sleep disturbances included try to relax, read, and pray.

The most frequent affective response to sleep disturbances by the elderly was to accept the disturbance. In light of the findings regarding the view of sleep of others, this is not surprising. It would seem that the elderly in this study expect sleep pattern changes with advancing age, and accept these changes.

Implications for Nursing

With the growing number of elderly in the population, it will become increasingly important for nurses to assist elderly clients to manage sleep disturbances. Previous studies have indicated that elderly who take sedatives often began taking sedatives when hospitalized. Sedatives are frequently included in the medical plan of care on an as needed basis, and the nurse has great latitude in administering sedatives. Nurses must be aware of the great variability in sleep behavior exhibited by the elderly so that sedatives are not administered when they are not needed.

Although sleep pattern changes occur frequently with aging, the majority of elderly in this study do not define these changes as problems. Health care providers must avoid defining sleep changes as problems. An accurate assessment must include not only assessment of the typical sleep pattern of the individual, but should also include the client's perception of the cause of the sleep disturbance, and their affective response to the disturbance. The effect of sleep disturbance on daytime functioning is also important. Further assessment should include facilitators the client has found helpful in the past. By evaluating the sleep behavior of individual clients nursing care can be designed to avoid interfering with the sleep routine of elderly clients.

In reviewing the elderly client's sleep history it is important for the nurse to recognize the role of emotional stress. Although emotional stress was indicated as a factor affecting overall sleep by 67 subjects, only 24 subjects indicated that reducing stress was effective in managing overall sleep patterns. Strategies found to be effective in facilitating sleep onset and dealing with waking up at night without being able to return to sleep were trying to relax, reading, praying, thinking of something else, and listening to the radio. All of these strategies can be thought of as

mechanisms for dealing with emotional stress. Helping elderly individuals deal with emotional stressors such as multiple losses that often accompany aging are within the realm of nursing and may lead to a decreased incidence of sedative use. Assisting the client to manage sleep disturbances should include the suggestion of sleep facilitators, rather than the use of sedatives. Suggesting simple facilitators such as relaxation techniques or prayer may be helpful.

Evaluation of the effectiveness of behavioral facilitators is an important role for the nurse. Sleep may be improved, requiring no further intervention. If sleep is not improved, the client may be more accepting of the disturbance, and may not desire any further assistance.

Nurses play a pivotal role in the identification of sleep problems and their management. Management should include the suggestion of sleep facilitators rather than the use of sedatives.

As a member of the health care team, the gerontological nurse is often the expert regarding normal age related changes. The gerontological nurse plays a vital role in educating other members of the health care team regarding sleep behavior changes associated with aging. This is important not only in

identifying abnormalities that should be treated, for example sleep apnea, but also in avoiding intervention that is not only unnecessary but potentially harmful.

Recommendations for Further Research

Findings from this research further elucidated the behavioral component of the objective behavioral theory of sleep (Webb, in press). Findings from the retrospective component of the Sleep Questionnaire support previous report regarding the developmental nature of sleep behavior. Longitudinal studies are recommended to further clarify the role of developmental stages in regard to sleep behavior. Such longitudinal studies could be undertaken in conjunction with existing longitudinal studies of the elderly, for example, the Dunedin Program, the Duke Longitudinal Study and the Baltimore Longitudinal Study.

Several sleep facilitators have been identified as effective in dealing with sleep disturbances. Further research using experimental designs are recommended to determine the most effective strategies as well as those that have been found helpful by elderly individuals. Further research is needed to determine if these facilitators are generalizable to other elderly individuals experiencing sleep disturbances.

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APPENDIX A
SLEEP QUESTIONNAIRE

The following questions have to do with the way you sleep now, the way you slept when you were younger, and the way you think others your age sleep. PLEASE CIRCLE THE NUMBER OF THE ANSWER THAT BEST DESCRIBES THE WAY YOU FEEL.

1. How well do you usually sleep at night NOW?
1) Very Well 2) Satisfactorily 3) Some Problems 4) Poorly
2. How well did you usually sleep at night WHEN YOU WERE YOUNGER?
1) Very Well 2) Satisfactorily 3) Some Problems 4) Poorly 5) Don't Remember
3. Do you have a friend or relative your age who has trouble sleeping 1) YES 2) NO
4. How well do you think OTHER PEOPLE YOUR AGE usually sleep at night?
1) Very Well 2) Satisfactorily 3) Some Problems 4) Poorly 5) Don't Know
5. Do you usually feel well rested when you wake up, or soon thereafter NOW?
1) Almost Never 2) Occasionally 3) Often 4) Almost Always
6. Did you usually feel well rested when you awakened, or soon thereafter WHEN YOU WERE YOUNGER?
1) Almost Never 2) Occasionally 3) Often 4) Almost Always 5) Don't Remember
7. Do you think OTHER PEOPLE YOUR AGE usually feel well rested when they awaken, or soon thereafter?
1) Almost Never 2) Occasionally 3) Often 4) Almost Always 5) Don't Know
8. In general, the amount of sleep you get NOW is:
1) Not Enough 2) About Enough 3) Too Much
9. The amount of sleep you got WHEN YOU WERE YOUNGER was:
1) Not Enough 2) About Enough 3) Too Much 4) Don't Remember
10. The amount of sleep you think OTHERS YOUR AGE get is:
1) Not Enough 2) About Enough 3) Too Much 5) Don't Know
11. How many HOURS on the average, do you sleep per night NOW? _____HOURS.
12. How many hours on the average, did you sleep per night WHEN YOU WERE YOUNGER?
_____HOURS _____Don't Remember
13. How many hours per night on the average, do you think OTHERS YOUR AGE sleep?
_____HOURS _____Don't Know
14. How many hours of sleep per night do you think that you need NOW to feel well and function adequately?_____HOURS
15. How many hours of sleep per night did you think that you needed WHEN YOU WERE YOUNGER to feel well and function adequately? _____HOURS _____Don't Remember
16. How many hours of sleep per night do you think that OTHERS YOUR AGE need to feel well and function adequately?_____HOURS _____Don't Know
17. How many hours of sleep per night do you prefer to have NOW when you have a chance?_____HOURS
18. How many hours of sleep per night did you prefer to have when you had a chance WHEN YOU WERE YOUNGER?_____HOURS _____Don't Remember

19. How many hours of sleep per night do you think OTHERS YOUR AGE prefer to have when they have a chance? _____HOURS _____Don't Know
20. On the average, about how many naps do you usually take each week NOW?
1) 0 2) 1 3) 2 4) 3 5) 4 6) 5 7) 6 8) 7 9) 8 10) MORE
21. On the average, about how many naps did you usually take each week WHEN YOU WERE YOUNGER?
1) 0 2) 1 3) 2 4) 3 5) 4 6) 5 7) 6 8) 7 9) 8 10) MORE 11) Don't Remember
22. On the average, about how many naps do you think OTHERS YOUR AGE usually take each week?
1) 0 2) 1 3) 2 4) 3 5) 4 6) 5 7) 6 8) 7 9) 8 10) MORE 11) Don't Know
23. About how many total hours do you usually spend each week taking naps NOW? _____HOURS
24. About how many total hours did you usually spend each week taking naps WHEN YOU WERE YOUNGER? _____HOURS _____Don't Remember
25. About how many total hours do you think OTHERS YOUR AGE usually spend each week taking naps? _____HOURS _____Don't Know
26. About how long does it typically take for you to go to sleep NOW? _____MINUTES.
If More Than One Hour, How Long? _____HOURS
27. About how long did it typically take for you to go to sleep WHEN YOU WERE YOUNGER? _____MINUTES. If More Than One Hour, How Long? _____HOURS _____Don't Remember
28. About how long do you think it typically takes PEOPLE YOUR AGE to go to sleep? _____MINUTES. If More Than One Hour, How Long? _____HOURS _____Don't Know
29. How often do you have trouble getting to sleep as quickly as you would like NOW?
1) Almost Never 2) Occasionally 3) Often 4) Almost Always
30. How often did you have trouble getting to sleep as quickly as you would have liked WHEN YOU WERE YOUNGER?
1) Almost Never 2) Occasionally 3) Often 4) Almost Always 5) Don't Remember
31. How often do you think OTHERS YOUR AGE have trouble getting to sleep as quickly as they would like?
1) Almost Never 2) Occasionally 3) Often 4) Almost Always 5) Don't Know
32. About how many times on the average do you wake up each night NOW?
_____TIMES
33. About how many times on the average did you wake up each night WHEN YOU WERE YOUNGER? _____TIMES. _____Don't Remember
34. About how many times on the average do you think OTHER PEOPLE YOUR AGE wake up each night? _____TIMES. _____Don't Know
35. After you get to sleep at night, how much time do you spend awake?
_____None _____MINUTES _____HOURS
36. After you got to sleep at night, how much time did you spend awake WHEN YOU WERE YOUNGER? _____None _____MINUTES _____HOURS _____Don't Remember

37. After going to sleep at night, how much time do you think OTHERS YOUR AGE spend awake
 _____None _____MINUTES _____HOURS _____Don't Know
38. How much do you enjoy sleep NOW?
 1) Not At All 2) A Little 3) Moderately 4) Much
39. How much did you enjoy sleep WHEN YOU WERE YOUNGER?
 1) Not At All 2) A Little 3) Moderately 4) Much 5) Don't Remember
40. How much do you think OTHERS YOUR AGE enjoy sleep?
 1) Not At All 2) A Little 3) Moderately 4) Much 5) Don't Know
41. Do you always go to bed at the same time NOW?
 1) Yes 2) Usually 3) Sometimes 4) Never
42. Did you always go to bed at the same time WHEN YOU WERE YOUNGER?
 1) Yes 2) Usually 3) Sometimes 4) Never 5) Don't Remember
43. Do you think OTHERS YOUR AGE always go to bed at the same time?
 1) Yes 2) Usually 3) Sometimes 4) Never 5) Don't Know
44. Do you always waken at the same time NOW?
 1) Yes 2) Usually 3) Sometimes 4) Never
45. Did you always waken at the same time WHEN YOU WERE YOUNGER?
 1) Yes 2) Usually 3) Sometimes 4) Never 5) Don't Remember
46. Do you think PEOPLE YOUR AGE awaken at the same time?
 1) Yes 2) Usually 3) Sometimes 4) Never 5) Don't Know
47. What is your average bedtime during the week NOW? _____
48. What was your average bedtime during the week WHEN YOU WERE YOUNGER? _____
 _____Don't Remember
49. What do you think is the average bedtime during the week of PEOPLE YOUR AGE? _____
 _____DON'T KNOW
50. What is your average bedtime on weekends NOW? _____
51. What was your average bedtime on weekends WHEN YOU WERE YOUNGER? _____
 _____Don't Remember
52. What do you think is the average bedtime on weekends PEOPLE YOUR AGE? _____
 _____DON'T KNOW
53. What is your average wake up time during the week NOW ? _____
54. What was your average wake up time during the week WHEN YOU WERE YOUNGER? _____
 _____Don't Remember
55. What do you think that is the average time a PERSON YOUR AGE wakes up? _____
 _____Don't Know
56. What is your average wake up time on weekends NOW? _____
57. What was your average wake up time on weekends WHEN YOU WERE YOUNGER? _____
 _____Don't Remember

57. What do you think the average wake up time on weekends is for OTHERS YOUR AGE? _____
 _____ Don't Know

58. How often do you use an alarm clock or a radio to help you wake up NOW?

- 1) Almost Always 2) Often 3) Occasionally 4) Almost never

59. How often did you use an alarm clock or a radio to help you wake up WHEN YOU WERE YOUNGER?

- 1) Almost Always 2) Often 3) Occasionally 4) Almost never 5) Don't Remember

60. How often do you think OTHERS YOUR AGE use an alarm clock or a radio the help them wake up?

- 1) Almost Always 2) Often 3) Occasionally 4) Almost never 5) Don't Know

61. How many days per week do you usually go to bed more than one hour earlier or more than one hour later than your average bedtime NOW?

- 1) 0 2) 1 3) 2 4) 3 5) 4 6) 5 7) 6 8) 7

62. How many days per week did you usually go to bed more than one hour earlier or more than one hour later than your average bedtime WHEN YOU WERE YOUNGER?

- 1) 0 2) 1 3) 2 4) 3 5) 4 6) 5 7) 6 8) 7 9) Don't Remember

63. How many days per week do you think OTHERS YOUR AGE go to bed more than one hour earlier or more than one hour later than their average bedtime?

- 1) 0 2) 1 3) 2 4) 3 5) 4 6) 5 7) 6 8) 7 9) Don't Know

64. How many days per week do you usually wake up earlier than you expect to and are unable to return to sleep NOW?

- 1) 0 2) 1 3) 2 4) 3 5) 4 6) 5 7) 6 8) 7

65. WHEN YOU WERE YOUNGER, how many days per week did you usually wake up earlier than you expected to and were unable to return to sleep?

- 1) 0 2) 1 3) 2 4) 3 5) 4 6) 5 7) 6 8) 7 9) Don't Remember

66. How many days per week do you think OTHERS YOUR AGE wake earlier than they expect and are unable to return to sleep?

- 1) 0 2) 1 3) 2 4) 3 5) 4 6) 5 7) 6 8) 7 9) Don't Know

67. How light or deep do you consider your sleep NOW?

- 1) Very Light 2) Light 3) Deep 4) Very Deep

68. How light or how deep did you consider your sleep WHEN YOU WERE YOUNGER?

- 1) Very Light 2) Light 3) Deep 4) Very Deep 5) Don't Remember

69. How light or deep do you think OTHERS YOUR AGE consider their sleep?

- 1) Very Light 2) Light 3) Deep 4) Very Deep 5) Don't Know

The following items are about sleep disturbances you may have experienced WITHIN THE LAST YEAR.

70. Have you asked a health care professional for help because of sleep disturbances during the last year?

- 1) Yes 2) No, even though I've had trouble sleeping 3) I haven't had any trouble sleeping and haven't needed help.

71. If your answer was "yes", did you receive any useful advice or treatment?

- 1) Yes 2) No 3) Unknown

72. If you did receive useful treatment, what was it? _____

73. Have you asked a friend or relative for help because of sleep disturbances during the last year?

- 1) Yes 2) No, even though I've had trouble sleeping 3) I haven't had any trouble sleeping and haven't needed help.

74. If your answer was "yes", did you receive any useful advice or help?

- 1) Yes 2) No 3) Unknown

75. If you did receive useful advice or treatment, what was it? _____

76. Do you feel any of the following may be affecting your overall sleep?

- | | |
|---------------------------|---|
| a. Caffeine | 1) Yes 2) No 3) Don't know 4) Doesn't Apply |
| b. Lack of exercise | 1) Yes 2) No 3) Don't know 4) Doesn't Apply |
| c. Going to bed too early | 1) Yes 2) No 3) Don't know 4) Doesn't Apply |
| d. Going to bed too late | 1) Yes 2) No 3) Don't know 4) Doesn't Apply |
| e. Getting up too late | 1) Yes 2) No 3) Don't know 4) Doesn't Apply |
| f. Presence of pain | 1) Yes 2) No 3) Don't know 4) Doesn't Apply |
| g. Emotional stress | 1) Yes 2) No 3) Don't know 4) Doesn't Apply |
| h. Naps | 1) Yes 2) No 3) Don't know 4) Doesn't Apply |

77. If there is something else that interferes with your sleep, please describe.

78. If you have done any of the following to help your overall sleep pattern during the last year, please note how well they worked for you. Answer only the ones which you have done.

- | | |
|-------------------------|--|
| a. Decreased caffeine | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |
| b. More exercise | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |
| c. Went to bed later | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |
| d. Went to bed earlier | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |
| e. Got up earlier | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |
| f. Got up later | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |
| g. Relieved pain | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |
| h. Reduced stress | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |
| i. Took fewer naps | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |
| j. Changed time of naps | 1) Very Well 2) Fairly Well 3) Poorly 4) No Help |

79. I did not try any of the above, but I did try something else. It was (please describe). _____

80. If you have trouble falling asleep at night, how often do you do one or more of the following? ___I never have trouble falling asleep at night. (Go on to number 84 if you never have trouble falling asleep at night.)

- | | |
|-------------------------|---|
| Try to relax | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Read | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Get out of bed | |
| and do something | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Watch T.V. | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Listen to the radio | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Take a sleeping pill | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Take a pain pill | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Drink milk | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Drink alcohol | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Talk to someone | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Pray | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Eat something | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Count sheep | 1) Every Time 2) Once In A While 3) Rarely 4) Never |
| Think of something else | 1) Every Time 2) Once In A While 3) Rarely 4) Never |

81. Something else I try when I have trouble getting to sleep is _____

82. If you tried something else, how well did it work? _____

83. If you have done any of the above when you can't get to sleep at night, please note how well they worked for you. Answer only the ones you have done.

- | | | | | |
|-------------------------|--------------|----------------|-----------|------------|
| a. Try to relax | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| b. Read | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| c. Get out of bed | | | | |
| and do something | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| d. Watch T.V. | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| e. Listen to the radio | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| f. Take a sleeping pill | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| g. Take a pain pill | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| h. Drink milk | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| i. Drink alcohol | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| j. Talk to someone | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| k. Pray | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| l. Eat something | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| m. Count sheep | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| n. Think of something | | | | |
| else | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |

84. If you wake up at night and can't get back to sleep, how often do you do one or more of the following things? ____ I never wake up at night without being able to get back to sleep. (Go on to question 88 if you don't wake up at night without being able to get back to sleep.)

- | | | | | |
|----------------------------|---------------|--------------------|-----------|----------|
| a. Try to relax | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| b. Read | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| c. Get out of bed | | | | |
| and do something | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| d. Watch T.V. | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| e. Listen to the radio | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| f. Take a sleeping pill | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| g. Take a pain pill | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| h. Drink milk | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| i. Drink alcohol | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| j. Talk to someone | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| k. Pray | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| l. Eat something | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| m. Count sheep | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| n. Think of something else | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |

85. Something else I try when I wake up at night and can't get back to sleep is _____

86. If you tried something else, how well did it work? _____

87. If you do any of the following to help you get back to sleep when you wake up at night and can't get right back to sleep, please note how well they work for you. Answer only the ones which you do.

- | | | | | |
|----------------------------|--------------|----------------|-----------|------------|
| a. Try to relax | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| b. Read | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| c. Get out of bed | | | | |
| and do something | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| d. Watch T.V. | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| e. Listen to the radio | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| f. Take a sleeping pill | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| g. Take a pain pill | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| h. Drink milk | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| i. Drink alcohol | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| j. Talk to someone | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| k. Pray | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| l. Eat something | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| m. Count sheep | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| n. Think of something else | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |

88. If you wake up in the morning earlier than you would like, how often do you do one or more of the following? ____ I never wake up earlier than I like to in the morning. (Go on to number 92 if you don't wake up earlier than you would like in the morning.)

- | | | | | |
|----------------------------|---------------|--------------------|-----------|----------|
| a. Try to relax | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| b. Read | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| c. Get out of bed | | | | |
| and do something | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| d. Watch T.V. | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| e. Listen to the radio | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| f. Take a pain pill | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| g. Drink milk | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| h. Drink alcohol | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| i. Talk to someone | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| j. Pray | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| k. Eat something | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| l. Count Sheep | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |
| m. Think of something else | 1) Every Time | 2) Once In A While | 3) Rarely | 4) Never |

89. Something else I try when I wake up earlier than I would like in the morning is

90. If you tried something else, how well did it work? _____

91. If you do any of the following when you wake in the morning earlier than you like, how well do they work. Answer only the ones you have done.

- | | | | | |
|----------------------------|--------------|----------------|-----------|------------|
| a. Try to relax | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| b. Read | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| c. Get out of bed | | | | |
| and do something | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| d. Watch T.V. | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| e. Listen to the radio | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| f. Take a pain pill | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| g. Drink milk | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| h. Drink alcohol | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| i. Talk to someone | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| j. Pray | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| k. Eat something | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| l. Count sheep | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |
| m. Think of something else | 1) Very Well | 2) Fairly Well | 3) Poorly | 4) No Help |

92. If you don't fall asleep as quickly as you would like at night, how do you feel?

(Choose one or more.)

- ☐ I always fall asleep as quickly as I like
- ☐ Worried
- ☐ Frustrated
- ☐ Angry
- ☐ Accept it
- ☐ Happy to have more time
- ☐ Physically tired
- ☐ Depressed
- ☐ Don't think about it
- ☐ Other (Please describe) _____

93. When you wake up at night and can't get back to sleep as quickly as you would like, how do you feel? (Choose one or more.)

- ☐ I never wake up at night and am unable to get back to sleep
- ☐ Worried
- ☐ Frustrated
- ☐ Angry
- ☐ Accept it
- ☐ Happy to have more time
- ☐ Physically tired
- ☐ Depressed
- ☐ Don't think about it
- ☐ Other (Please describe) _____

94. When you wake up in the morning earlier than you would like, how do you feel? (Choose one or more.)

- ☐ I never wake up in the morning earlier than I would like
- ☐ Worried
- ☐ Frustrated
- ☐ Angry
- ☐ Accept it
- ☐ Happy to have more time
- ☐ Physically tired
- ☐ Depressed
- ☐ Don't think about it
- ☐ Other (Please describe) _____

THANK YOU FOR YOUR TIME AND ENERGY IN COMPLETING THIS QUESTIONNAIRE.

PLEASE FEEL FREE TO USE THE REST OF THIS PAGE TO MAKE ANY ADDITIONAL COMMENTS YOU MAY HAVE.

APPENDIX B
FREQUENCY OF USE OF SLEEP FACILITATORS AND INHIBITORS
AND THEIR EFFECTIVENESS

Table 19

Frequency of Sleep Facilitator or Inhibitor When
Experience Difficulty Falling Asleep

Facilitator or Inhibitor	always		sometimes		never	
	n	%	n	%	n	%
Relax	49	68.1	21	29.2	2	2.8
Read	45	50.0	39	43.1	6	6.7
Get up	13	25.5	31	60.8	7	13.7
Watch T. V.	7	14.6	26	54.2	15	31.3
Radio	17	33.3	20	39.2	14	27.5
Sleeping pill	10	19.2	25	48.1	17	32.7
Pain pill	7	15.9	23	52.3	14	31.8
Milk	12	21.1	29	50.9	16	28.1
Alcohol	1	3.4	7	24.1	21	72.4
Talk to someone	6	16.7	8	22.3	22	61.1
Pray	31	45.6	33	48.6	4	5.9
Eat	9	21.4	21	50.0	12	28.6
Count sheep	6	15.8	19	42.1	16	42.1
Think of something	18	34.0	34	64.1	1	1.9

Table 20

Effectiveness of Behavioral Facilitator or Inhibitor
for Getting to Sleep at Night

	very well		fairly well		poorly	
	n	%	n	%	n	%
Facilitator or Inhibitor						
Relax	11	26.8	22	53.7	8	19.5
Read	24	40.7	32	54.2	3	5.1
Get up	6	23.0	14	53.8	6	23.0
Watch TV	5	26.3	13	68.4	1	5.3
Radio	9	37.5	15	62.5	-	--
Sleeping pill	11	64.7	6	35.3	-	--
Pain pill	5	27.8	13	72.2	-	--
Milk	6	24.0	16	64.0	3	1.2
Alcohol	2	50.0	1	25.0	1	25.0
Talk to someone	3	75.0	1	25.0	-	--
Pray	12	34.4	19	55.9	3	8.8
Eat	2	15.4	11	84.6	-	--
Count sheep	-	--	2	66.6	1	33.3
Think of something	5	20.0	14	56.0	6	34.0

Table 21

Frequency of Behavioral Facilitator or Inhibitor
When Wake up at Night and Unable to Return to Sleep

	always		sometimes		never	
Facilitator or Inhibitor	n	%	n	%	n	%
Relax	23	45.1	27	53.0	1	2.0
Read	28	43.8	34	53.1	2	3.1
Get up	12	32.4	20	54.0	5	13.5
Watch TV	10	32.3	13	41.9	8	25.8
Radio	14	43.8	13	40.7	5	15.6
Sleeping pill	6	23.1	12	46.2	8	30.8
Pain pill	8	27.6	15	51.7	6	20.7
Milk	7	25.0	12	42.8	9	32.1
Alcohol	-	--	6	42.8	8	57.1
Talk to someone	5	27.8	4	22.2	9	50.0
Pray	14	42.4	17	51.6	2	6.1
Eat	7	24.1	17	58.6	5	17.2
Count sheep	4	22.2	11	61.1	3	16.7
Think of something	13	43.3	17	56.6	-	--

Table 21

Effectiveness of Behavioral Facilitator or Inhibitor
When Awaken at Night and Unable to Return to Sleep

Facilitator or Inhibitor	very well		fairly well		poorly	
	n	%	n	%	n	%
Relax	5	15.6	15	46.8	12	37.6
Read	20	40.0	27	54.0	3	6.0
Get up	9	36.0	15	60.0	1	4.0
Watch TV	5	35.7	6	42.9	3	21.4
Radio	7	35.0	11	55.0	2	10.0
Sleeping pill	7	53.8	6	46.2	-	--
Pain pill	6	40.0	9	60.0	-	--
Milk	4	30.8	6	46.2	3	23.1
Alcohol	2	75.0	1	25.0	-	--
Talk to someone	1	25.0	2	50.0	1	25.0
Pray	6	27.2	12	54.5	4	18.2
Eat	5	35.7	7	50.0	2	14.2
Count sheep	1	25.5	1	25.5	2	50.0
Think of something	2	10.5	12	63.2	5	26.3

Table 22

Frequency of use of Behavioral Facilitators and Inhibitors When Wake in the Morning Earlier Than Like

	always		sometimes		never	
	n	%	n	%	n	%
Facilitators or Inhibitors						
Relax	36	61.0	21	35.6	2	3.4
Read	17	44.7	19	50.0	2	5.3
Get up	22	40.7	30	55.6	2	3.7
Watch TV	8	36.4	8	36.3	6	27.3
Radio	12	41.4	13	44.8	4	13.8
Pain pill	1	9.1	4	36.4	6	54.5
Milk	2	18.2	3	27.3	6	54.5
Alcohol	1	12.5	-	--	7	87.5
Talk to someone	2	25.0	1	12.5	5	62.5
Pray	5	29.4	6	35.3	6	35.3
Eat	1	10.0	5	50.0	4	40.0
Count sheep	10	45.5	10	45.5	2	9.1
Think of something	1	8.3	10	83.3	1	8.3

Table 23

Effectiveness of Behavioral Facilitators and Inhibitors
When Awaken in the Morning Earlier Than Like

Facilitator or Inhibitor	very well		fairly well		poorly	
	n	%	n	%	n	%
Relax	6	21.4	18	64.3	4	14.3
Read	13	50.0	13	50.0	-	--
Get up	11	40.7	14	51.9	2	7.4
Watch TV	3	30.0	6	60.0	1	10.0
Radio	6	37.5	9	56.3	1	6.3
Pain pill	1	100.0	-	--	-	--
Milk	-	--	1	100.0	-	--
Alcohol	-	--	1	100.0	-	--
Talk to someone	1	16.7	5	83.3	-	--
Pray	5	45.5	5	45.5	1	9.1
Eat	1	33.3	1	33.3	1	33.3
Count sheep	-	--	2	66.6	1	33.3
Think of something	2	28.6	3	42.7	2	28.6

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Marjorie White

Marjorie White, Chairperson
Professor of Nursing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Molly C. Dougherty

Molly C. Dougherty
Professor of Nursing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Melody J. Marshall

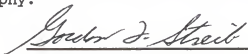
Melody Marshall
Associate Professor
of Nursing

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Wilse B. Webb

Wilse B. Webb
Graduate Research Professor
of Psychology

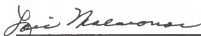
I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



Gordon Streib
Graduate Research Professor
of Sociology

This dissertation was submitted to the graduate Faculty of the College of Nursing and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 1988



Lois Malasanos
Dean, College of Nursing

Madelyn Lockhart
Dean, Graduate School

BIOGRAPHICAL SKETCH

Ruth A. Mooney was born in Muskogee, Oklahoma, raised in Brockway, Pennsylvania and graduated from Brockway Area High School. She received a BSN from Pennsylvania State University. Ms. Mooney has received a M. Ed. from Edinboro State College and a M. N. with a clinical specialty in gerontological nursing from UCLA.

Ms. Mooney served three years on active duty in the Army Nurse Corps and seventeen years in the Army Reserves. Ms. Mooney has been employed in acute care facilities and in home health. She has taught students at the practical, associate, and graduate levels of nursing. Her background also includes administrative experience. Her plan is to focus on teaching and research.